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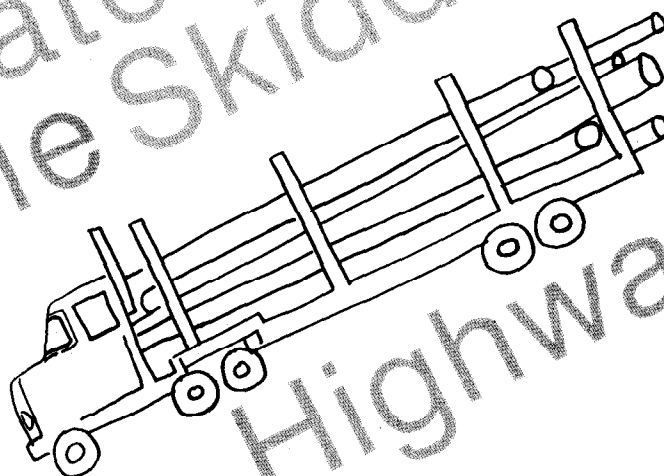
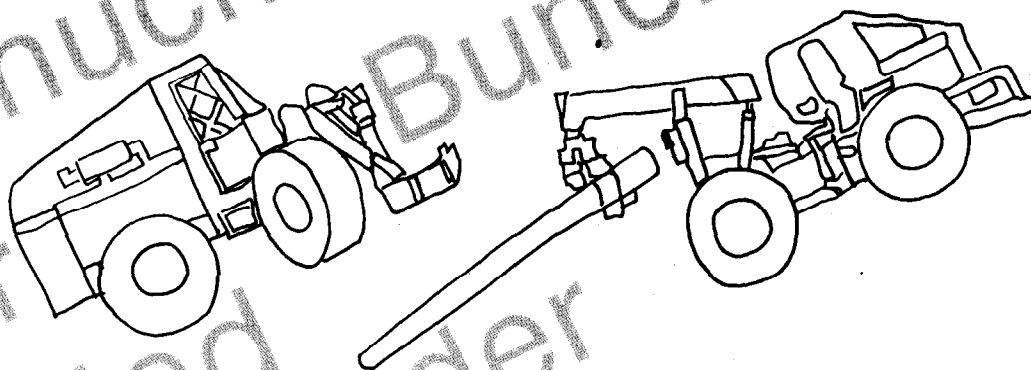
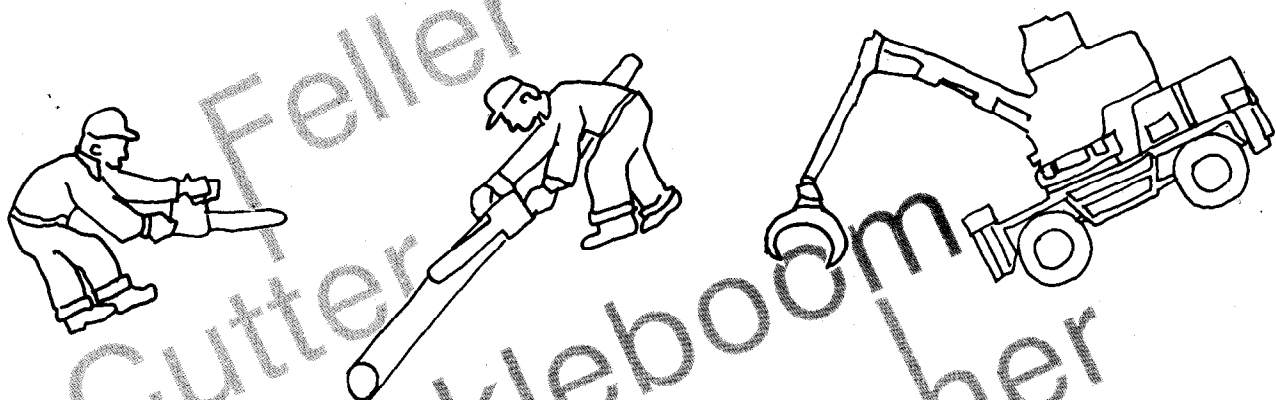
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Glossary of Terms Used in Timber Harvesting and Forest Engineering

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and Donald L. Sirois



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FOREWORD

The terminology used in forest engineering and harvesting has evolved over many years, beginning with the early lumberjacks who cut trees for homes and industry. With increased mechanization since the early 1940's, the meanings of some terms have changed, and many new terms have been added. Changes in forest management and increased utilization of the forest brought about by new products have also added to the scope of forest engineering terminology. With the increasing cost and complexity of forest operations, there is an ever-growing need for standardization of forest engineering terminology. The objective of this publication is to provide a glossary of definitions for a broad group of terms used in forestry and in forest engineering, with an emphasis on harvesting. This list of terms and definitions should result in better communication among people involved in forest engineering.

A literature review was conducted to assemble the terms from published sources in an attempt to exclude colloquial terminology. The literature citations referenced for each term follow the definition (in parentheses). References are listed in the literature cited section.

Although this collection does not include all timber harvesting and forest engineering terms, it is hoped that the compilation will provide a sufficiently extensive glossary for forest operations. The references listed can be used as sources for terms not found in this publication.

A

A-frame—Two wood or metal uprights mounted in the shape of the letter "A" to support lead blocks at the upper end (22).

—Two poles lashed together with a crosspiece in the form of an "A" with a block hung in the apex of the poles used as a loading device with the poles or sawed timbers joined at the top, anchored at the base, and guyed with cable (8).

Aboveground biomass—Aboveground portion of a tree, excluding the root system (29).

Abney level—Hand-held clinometer used to measure slope in percent (22).

Access—Means of gaining entry to timber on a tract or logging chance (6).

Accumulating shear—Shearhead on a feller-buncher that is capable of accumulating and holding two or more cut stems (35).

A.C.E.—Allowable-cut effect.

Active repair time—See machine time, mechanical delay time, scheduled operating time, delay time.

Actual productive time—See machine time, productive time.

Admiralty shackle—Heavy shackle at the tail tree that connects the skyline to the stub line (guyline extension) (1-9).

Adverse grade—In highway transport, uphill haul that requires trucks to use lower gears (10).

—Gradient that slopes upward in the direction of loaded log truck travel.

Aerial logging-Yarding system employing aerial lift of logs, such as balloons or helicopters (26).

Aerial photogrammetry—Interpreting information from aerial photographs (17).

Afforestation—Establishment of forest crops by artificial methods, such as planting or sowing on land where trees have never grown (28).

Age—Mean age of the trees comprising a forest, crop, or stand. In forests, the mean age of dominant (and sometimes codominant) trees is taken. The plantation age is generally taken from the year the plantation was begun, without adding the age of the nursery stock.

—Of a tree: the time elapsed since the germination of the seed, or the budding of the sprout or cutting from which the tree developed (26).

Age class—One of the intervals, commonly 10 or 20 years, into which the age range of tree crops is divided for classification or use. Also pertains to the trees included in such an interval. For example, trees ranging in age from 21 to 40 years fall into a 30-year age class; 30 designates the midpoint of the 20-year interval from 21 to 40 years (17).

Air-dried-Lumber or other wood products that have been either dried by exposure to natural atmospheric conditions outdoors or in an unheated shed or dried to equilibrium with the surrounding atmosphere. **Mois-**

ture content of air-dried wood fiber depends on relative humidity, temperature, and length of drying period. Also referred to as air seasoned (17).

All-aged-Forest or stand containing trees of almost all age classes up to and including trees of harvestable age (17).

Alligator-See crotch.

All live **trees**—See tree classes.

Allowable cut-Volume of timber that may be harvested during a given period to maintain sustained production (31).

Allowable-cut effect-Allocation of anticipated future forest timber yields to the present allowable cut; this is employed to increase current harvest levels (especially when constrained by evenflow) by spreading anticipated future growth over all the years in the rotation (17).

Anchor cable-Line used to tie down a yarder to prevent tipping on a heavy pull (32).

Anchor log-Wooden, concrete, or metal bar buried in the earth to hold a guy rope. Also called a **deadman** (32).

Angledozei-Heavy steel blade mounted across the front of a crawler tractor. The blade can be raised and lowered, and each end can be advanced and retracted to place the blade at various angles, making it possible to push dirt to either side (24).

Annual allowable harvest-Quantity of timber scheduled to be removed from a particular management unit in 1 year (17).

Annual growth-Average annual increase in the biomass of growing-stock trees of a specified area (30).

Anvil-Fixed steel block that provides support and resistance for the cutting blade of a single-action tree shear. The hydraulically operated cutting blade slices through the tree towards the anvil. Also known as a bed plate (9).

-See portable chipper terms (23).

Appraised price-Price of a particular timber sale based on the estimate of the timber's actual market value. The minimum acceptable price on a sale (22).

Arch-Supporting device towed behind or mounted on a skidding vehicle. Used to lift one end of a log or logs to reduce sliding resistance and/or transfer the weight of the load to a skidding vehicle (24).

Arching-Skidding logs or trees using a mounted or **trailing arch** (8).

Area regulation-Method of controlling the annual or periodic acreage harvested from a forest, despite fluctuations in fiber-yield volumes. Leads to a managed forest (I 7).

Area salvage--Timber sales in which the USDA Forest Service sells dead timber within a given area. Usually covers more than one operating season and requires the operator to return annually to remove any dead timber present (12).

Articulated-With reference to a vehicle, hinged at the center for turning, as with a wheeled skidder (24).

Artificial regeneration-Renewal of the forest by planting or direct seeding; establishing a new stand of trees by planting seeds or seedlings by hand or machine (I 7).

Aspect-Compass direction to which a slope faces. Also called exposure (I 7).

Average yarding distance—**Total** yarding distance for all turns divided by total number of turns for a particular setting (20).

A.Y.D.-Average yarding distance.

B

Backcut-Final cut in felling a tree. Made on the opposite side of the direction of fall (24).

Backfire-Blaze set in front of an advancing forest fire in an effort to check the wildfire by cutting off its fuel supply.

-Controlled fire set into the wind (17).

-See controlled burning.

Back guy-Line behind the spar tree, opposite the main line or skyline, which takes most of the pull in yarding logs (32).

Back line!-Boundary line marked by blazed or painted trees indicating the cutting area (8).

Ballhooter-Person who rolls or slides logs down a hillside (8).

Bank-Logs cut or skidded above the required daily production and held in reserve (8).

Barber chair-High slab-like splint, resembling a chair back, left standing on a stump above the undercut as a result of faulty felling or heavy lean of the tree (26).

Bardon hook-Hook used with wire rope slings for gripping trees or logs to be skidded (24).

-A type of choker hook (6).

Bare-root seedling—**Trec** seedling, grown in a nursery bed. When large enough for transplanting, the seedling is lifted from the nursery bed, and the dirt is removed from the roots before packaging (17).

Bark beetle—**Small**, cylindrical beetle of the family **Scolytidae**, the adult of which bores into and beneath the bark of various trees for the purpose of egg laying (17).

Barker-Machine used to remove bark from pulpwood (8).

Barking drum-Large drum in which logs or billets are tumbled by mechanical rotation, the bark being removed by abrasive action (26).

-See harvesting machine classifications, single function machines: debarker.

Barking iron—**Tool** with a narrow-shaped, curved blade used in removing bark by hand. Also called a spud (8).

Bark residue!-Refers to the bark removed from a log and also to portions of wood and foreign matter such as sand, grit, or stones that may be imbedded in the bark (1).

Barrel—**Liquid** measure, equivalent to 42 U.S. gallons (4).

Basal area—Cross sectional area of a tree, in square feet, measured at breast height. Used as a method of measuring the volume of timber in a given stand (12).

—See land classification.

Basal area factor—Number of units of basal area per acre (or per hectare) represented by each tree (17).

Basal area per acre—See land classification.

B.D.T.—Bone-dry ton.

B.D.U.—Bone-dry unit.

Bearing strength—Amount of weight that a soil or subgrade can safely support (20).

Bearing tree—Tree marked to identify the nearby location of a survey corner. Also known as a witness tree (17).

Bed—To level and buffer the ground along the line on which a tree is to be felled to minimize shattering of the timber (26).

Bedding—Raised mound on which seedlings are planted. Site preparation method used most extensively in the Southeastern United States (17).

Bed plate—See anvil.

Bench mark—Survey reference point, used to signify a starting point (29).

Beneficiation—Process used to upgrade chips, making them more acceptable for pulp and paper manufacture. Upgrading is accomplished by separating the acceptable chips from the unacceptable (3).

Benefit-cost ratio—Ratio obtained by dividing the anticipated benefits of a project by its anticipated costs. Either gross or net benefits may be used as the numerator (26).

Berm—Outside or downhill side of a ditch or trench.

—Shoulder of a road (17).

Bicycle—Carriage or trolley used on a skyline (24).

Big stick loader—Steel frame located either midway on the bed of a bobtail pulpwood truck or directly behind the cab (20).

—Short, rotatable horizontal boom attached to a center post mounted on a pulpwood truck (19).

Biltmore stick—Graduated stick used to estimate tree diameters when held at right angles to the axis of the stem and comparing the graduations cut by lines of sight tangential to either edge of the stem (26).

Bind—To get a saw stuck when felling or bucking a tree and the sides of the cut pinch in; wedges are used to alleviate the situation.

—To get a long log stuck in the sharp curve of a flume (19).

Binder—Chain or wire rope used to bind logs. Also known as chain hook (24).

—Chain or cable used to secure logs on a truck (12).

Biomass—Total woody material in a forest. Refers to both merchantable material and material left following a conventional logging operation (4).

—In the broad sense, all of the organic material on a given area; in the narrow sense, burnable vegetation to be used for fuel in a combustion system (4).

Biomass harvesting—Harvesting of all material including limbs, tops, and unmerchantable stem and stumps, usually for energy wood (3).

Blaze—To permanently mark trees, indicating those to be cut or the course of a boundary, road, or trail (24).

Block—Pulley used in wire rope logging to change direction or increase pulling power (24).

—Log cut to a designated length, usually 4 to 8 feet, for veneer production. Also referred to as a bolt (12).

Block catting pattern—Felling pattern started along the timber's front face next to the roadside. A felling machine works back and forth along the face. When sufficient timber has been felled to allow skidding, the cutting machine begins a second pass along another side of the block (10).

Blow down—Tree or trees felled by wind. Also known as windfall (6).

Blower drive—Fan shaft on a turbocharger (22).

Blue-stain—Discoloration in the sapwood of pine. At one time this was thought to be a serious defect; now it is used as high-quality interior finish (19).

Blue-stain fungus—Most common form of fungal stain occurring in sapwood. Conifers are most susceptible but may also occur in light-colored heartwood of perishable timbers. Commonly develops in dead trees, logs, lumber, and other wood products until the wood is dry. Reduces the grade of wood, but does not significantly reduce the strength. Some blue-stain lumber is highly valued for specialty products (17).

Board foot—Unit of measurement represented by a 12-by 12-by 1-inch board (22).

—Unit of measurement for lumber and saw logs.

Refers to a 12-by 12-by 1-inch board or a segment of a log that will produce boards with these dimensions (24).

Bobtail—Refers to a two-axle truck (24).

Bole—Tree stem that has roughly grown to a substantial thickness, capable of yielding sawtimber, veneer logs, or large poles (26).

Bolster—See bunk (24).

Bolt—Short piece of pulpwood (22).

—Any short log, as a pulpwood bolt or pulpwood stick (8).

—Any short stick, generally between 2 and 8 feet long (24).

—Also referred to as a block

Bone-dry ton—Wood pulp or residue that weighs 2,000 pounds at zero percent moisture content. Also known as an oven-dry ton (17).

Bone-dry unit—Wood residue that weighs 2,400 pounds at zero percent moisture content (17).

Bone yard—Storage place for old, used, or worn out equipment or machinery (17).

Boom—Pole, timber, or metal arm protruding from a machine; for example, the boom on a loading machine.

-Raft of logs or a loose bag of logs in the water.
 -Logs connected together to form a pocket to confine logs into a raft (19).

Boring—Starting a cut in the center of a log using the tip of the saw blade. Also known as a plunge cut (24).

Box-See notch (24).
 -See undercut (6).

Brake pack-Internal brake on a skidder or machine transmission (23).

Branchwood-Wood portions of a tree excluding the stem and roots (26).

Brand-Log mark used to identify logs (17).
 -See mark (8).

Branding ax—Ax used to stamp brands into logs (19).

Break-up-Period of time in the spring when melting snow creates soft soil conditions and high water in streams. Logging must usually be curtailed during this time (17).

British thermal unit-Measure of the amount of heat required to raise 1 pound of water 1 degree Fahrenheit.
 -Amount of latent heat available to be released when a substance undergoes combustion (6).

Broadcast burn-Controlled fire used as a silvicultural treatment to burn a designated area within well-defined boundaries for the purpose of reducing fuel hazards (17).

Brow-See landing (8).

Brow log-Large log laid beside the track or road at a log dump or landing to prevent logs from swinging or kicking back against the railroad cars or logging trucks (6).

Browse—Buds, shoots, and leaves of woody plants that can be eaten by livestock or wild animals.
 -Feeding on woody plant material (17).

Brush-Growth of small trees and shrubs (24).
 -See slash (8).

Brush a road—To cover or fill mudholes, swampy places, and other depressions in a logging road to make it passable for vehicles (8).

Brush cut—To clear away brush from a trail, survey line, or tree before working (8).

Brush disposal-Getting rid of slash on a logging operation (19).

Brush out—To clear an area of brush for a trail, survey line, or road.

Buck-lb saw a felled tree into short cuts (22).
 -**To** saw felled trees into shorter lengths (24).

Bucker-One who saws felled trees into required lengths, such as logs, bolts, or sticks (8).
 -**See** slasher.

Bucking-See harvest functions, slashing.

Buckle guy-Line attached to the middle of a spar tree or steel tower (32).

Buckskin—Snag; standing dead tree or log whose bark has fallen partially or completely away and whose exposed wood has a bleached (buckskin) appearance (12).

Buffer strip or buffer zone-Strip of uncut timber left between cutting units or adjacent to another resource.

Also known as a green strip, leave strip, or streamside management zone (20).

-Strip of land varying in size and shape, preserving or enhancing aesthetic values around recreation sites and along roads, trails, or water (26).

Bulk density-Measure of weight per unit of volume of a material; generally serves as an indicator of the specific gravity of wood (4).

Bull block-Main line block in high-lead logging (22).
 -Large yarding block having a throat opening of sufficient size to allow the butt rigging to pass through (8).

Bull buck-One who runs a felling and bucking crew (8).

Bulldozer--Steel blade mounted across the front of a standard crawler tractor that can be raised and lowered but cannot be angled to one side or the other; therefore all pushing is straight forward (24).

Bull hook-See butt hook (8).

Bull stick-Steel bar for punching holes under stumps for placement of dynamite or powder (19).
 -**Tool** used in splicing wire rope (19).

Bummer-Small truck or dolly, with two small wheels and a short pole, used in skidding logs. Also known as a dolly (8).

Bunch-To gather trees or logs into small piles for subsequent skidding by other equipment (24).
 -**To** assemble logs together to form a load for transport (20).

Bunching-See harvest functions.

Bundle bucking-Cutting bundles or truck loads of tree-length wood or long wood into short lengths (8).

Bunk-Cross beam on which logs rest in a trailer or a truck (24).
 -The cross member on a log hauling truck, trailer, or log car on which the log rests. Also known as a bolster (8).

Busheling-System by which falling and bucking crews are paid by the volume of timber cut, rather than by the hour or other set rate.
 -Method of payment for performing piecework other than volume of timber cut, such as car loading (22).
 -Cutting wood on a per-cord or per-thousand basis (8).

Butt-Base of a tree.
 -Large end of a log (24).

Butt cut-See butt log (8).

Butt hook-Heavy hook on the butt rigging to which chokers are attached. Also known as bull hook.
 -Hook that attaches the dragline to the tackle on logs (22).

Butt log-First log cut above the stump. Also known as butt cut (22).

Butt off—To cut off a piece of a log because of a defect.
 -**To** square the end of a log (24).

Buttress-Ridge of wood that develops in the angle between a lateral root and the butt of a tree, which may extend up the stem to a considerable height (16).

Butt rigging-System of swivels and **clevises** that connects the haul-back and main lines to which chokers are fastened (22).

-Combination of swivels, shackles, chains, and hooks that permits both the hookup between the main and haul-back lines and the attachment of chokers (8).

Butt rot-Decay or rot characteristically confined to the base or lower bole of a tree (I 7).

C

Cable-Wire rope used for lines in yarding systems (22).

Cable logging-Yarding system employing winches in a fixed position (22).

Cable **skidder**-See harvesting machine classifications, single function machines: skidder.

Cable yarding-Taking logs from the stump area to a landing using an overhead system of winch-driven cables to which logs are attached with chokers (35).

Caliper-Instrument for determining tree and log diameters by measuring their rectangular projection on a straight graduated rule via two arms at right angles to (and one of them sliding along) the rule itself.

-The optical caliper determines upper, **out-of-reach** tree diameters through an optical system incorporating two parallel lines of sight separated by a variable baseline (26).

Calks (caulks)-Short, hobnail-like spikes in the soles and heels of boots, designed to give secure footing while walking on logs. Also known as corks (17).

Cambium-Layer of living cells between the wood and the innermost bark of a tree. Each growing season the cambium adds a new layer of cells (by cell division) on the wood already formed, as well as a layer of inner bark on the cambium's outer face (17).

Canary-Iron rod 6 feet long with a hook on one end and a handle on the other. Used to pull cable or chain under bundles of pulpwood or logs for binding or hookup (8).

Candy **side**-Well-equipped, smoothly operated, and efficient logging show.

-Site with big logs or flat ground; therefore, one that is easy to work (12).

Canopy-More or less continuous cover of branches and foliage formed collectively by adjacent tree crowns.

;Protective covering over an operator's cab (20).

Cant-Log that is squared on two or more sides (24).

Cant dog-Short, stubby peavey (19).

Cant hook-Stout wooden lever used in rolling logs. Differs from a peavey in that it has no spike in the end of the stock (24).

-Tool similar to a peavey, having a toe ring and lip at the end instead of a spike (8).

-See peavey.

Cap-Cone of sheet iron on steel, with a hole in the apex through which a chain passes, fitted over the end of a log to prevent catching on stumps in skidding (8).

Capital-Plant, equipment, and related facilities used to produce a flow of goods and services (22).

Capstan-Drum that provides power to a cable by friction rather than by attachment (24).

Carriage-Mechanical assembly that moves while suspended above the ground by the skyline. Logs are attached to the carriage or to the skidding line for yarding (15).

Cash flow-Difference between cash receipts and cash, expenditures over a given time (22).

Catface-Partially healed fire scar on the face of a tree; often the place where rot enters (24).

Centrifugal air cleaner-precleaning system in an engine that removes large dust particles (23).

C.F.I.-Continuous forest inventory.

C.F.L.-Commercial forest land.

Chain-Unit of length equal to 66 feet (20).

Chain hook-Same as binder.

-Used to tighten and fasten a log chain (23).

Chaining-Method of skidding pulpwood on short, steep slopes by wrapping a chain around several bunches of wood and dragging them crosswise down the slope (8).

Chain saw-Saw that is powered by a gasoline, hydraulic, or electric motor; cutting elements are on an endless chain similar to a bicycle chain (24).

Chance-Logging unit such as a timber sale or a specific drainage area (24).

-Any unit of operation in the woods that has particular reference to its topographical characteristics (26).

Chaser-Member of a logging crew who unhooks the logs at the landing and does other odd jobs (24).

Check-Splitting of the wood in logs or lumber, often the result of drying (8).

Check scaler-One who **rescales** logs in order to detect errors in the initial scaling (8).

Chemical pulping-Process in which wood fibers are separated by removing the lignin and certain other wood components through the use of chemicals (17).

Chemical thinning-Any thinning in which the unwanted trees are killed by chemical poisoning; band or frill girdling may be done at the same time (26).

Chip-Small piece of wood used to make pulp. Chips are made either from wood waste in a sawmill or pulpwood operation, or from pulpwood specifically cut for this purpose. Chips are larger and coarser than sawdust (12).

Chip-n-saw-Registered trade name for a machine that makes small logs into cants, converting part of the outside of the log directly into chips without producing any sawdust. Cants are then sawn into lumber as part of the same operation (17).

Chipper-See harvesting machine classifications, single function machines.

Chipper deck-See portable chipper terms.

Chipper discharge-See portable chipper terms.

Chipper infeed-See portable chipper terms.

Chipper knife-See portable chipper terms.

Chipping-See harvest functions.

Chip separator-Attachment to whole-tree chippers that separates acceptable chips from unacceptable bark, limbs, and foliage (3).

Chip unit-Chip volume equal to 1 cord of pulpwood (24).

Choked-Condition in which a log is attached to a skidding unit by means of a wire rope or chain choker (22).

Choker-Short length of flexible wire, rope, or chain used to attach logs to a winch line or directly to a tractor.

- Noose of wire rope for hauling a log (22).
- Short length of wire rope that forms a noose around the end of a log to be skidded and is attached to the skidding vehicle or to the butt rigging in a wire rope logging system (8).

Choker hooks-Fastener on the end of a choker that forms the noose (22).

Choker man-See chokersetter (8).

Chokersetter-Person in a logging operation who places the choker around the log to be hauled to the landing.

- Beginning job for novice loggers (12).
- One who attaches chokers to logs in the woods for the skidding unit (8).

* **Chord—Straight** line that joins the end points of any arc. In cable yarding, it is used to determine cable deflection (22).

Chunk up-Clean up and pile debris after logging an area (8).

Chute-See portable chipper terms.

Clam-bunk-Payload bed of a forwarder, equipped with top-opening hydraulic jaws (27).

- See harvesting machine classifications, single function machines: skidder.

Clear-Log without knots; first quality log (19).

Clearcut-Cutting all trees in an area to a minimum **diameter**, such as 4 inches (24).

- All merchantable trees are cut and removed (8).

Clearcutting-All merchantable trees on a setting to be yarded are felled (22).

Clear length-Portion of the tree between the ground and the point where the lowest limbs join the trunk (12).

Clevis-U-shaped metal fitting, with a pin connecting the two ends, used for connecting cables and rigging (22).

- C-shaped hook with a pin through it for use in towing or attaching to a cable (23).

Climax forest-Plant community dominated by trees representing the culminating stage of natural **succession** for that specific locality and environment (17).

Climax species-Plant species that will remain essentially unchanged in terms of species composition for as long as the site remains undisturbed (17).

Climbing rope-Manila rope, usually with a steel cord, attached to the belt of a high rigger and looped around the tree to provide a brace (32).

Clinometer-Hand instrument used by foresters and timber cruisers to measure vertical angles. Such angles, when correlated with specific distances, indicate the height of standing trees (12).

Closed-top van-Van **with a** sealed top that must be rear loaded (23).

Closing line-Line used to close a grapple (22).

C.M.A.I.—Culmination of the mean annual increment.

Coarser residue-Plant residue that is suitable for chipping; for example, slabs, edgings, and veneer cores (33).

Coastal plain-Any plain (or plains) of unconsolidated **fluvial** or marine sediment that had its margin on the shore of a large body of water, particularly the sea. (For example, the Atlantic Coastal Plain of the Southeastern United States, which extends for 3,000 miles from New Jersey to **Texas**) (34).

Codomination—Trees with crowns forming the upper level of the forest canopy; these trees receive full light from above but comparatively little from the sides, and their medium-sized crowns are usually more or less crowded on the sides (28).

- Species in a mixed forest that are equally numerous and vigorous (20).

Cold deck-Pile of logs left for **later** transportation (22).

- Logs piled on a landing for future loading when skidding units are finished with the area (8).

Commercial forest land-See land-use classes, forest land.

Commercial thinning-Partial harvesting of a stand of trees for economic gains from the harvested trees and to accelerate the growth of the trees left standing (12).

Compaction-See soil reaction nomenclature, soil compaction.

Compartment-Forest management subdivision or block of land, usually of continuous land ownership (17).

Competition-Struggle among trees and other vegetation, generally for limited nutrients, light, and water present on a site. Competition can cause reduced tree growth. Severe competition in very dense stands may cause stand stagnation (17).

Complete **tree—Every** component of the tree from the needles to the root hairs (36).

Complete tree harvesting-Harvesting of a complete tree, including the roots (3).

Compression wood-See reaction wood.

Concentration yard-Pulpwood yard providing facilities for unloading trucks, storage, and loading for shipment (22).

Conifer—Tree that is a gymnosperm, usually evergreen, with cones and needle-shaped or scalelike leaves, producing wood known commercially as softwood (17).

Conk-Visible fruiting body of a wood-destroying fungus, usually indicating rot in the **underlying** wood (24).

Conservation-Protection, improvement, and wise use of natural resources according to principles that will

assure utilization of the resource to obtain the highest economic and/or social benefits (17).

Continuous forest inventory-Timber sampling system that provides for periodic remeasurement of specific stands or plots of individual trees; this shows status and periodic change over time for the forest as a whole and major subdivisions therein (17).

Contour felling-Timber felled parallel to ground contour line (20).

Contract hauler-Independent truck owner or a driver working for the contractor who hauls logs from the woods to the dump (19).

Contract logging—Operator doing all or part of the logging for a company (19).

-Independent logger who logs standing timber according to the terms of a contract (17).

Contractor-Person who has a contract to do all or any part of a logging job (19).

Controlled burning-Use of fire to destroy logging debris, reduce buildups of dead and fallen timber that pose wildfire hazards, control tree diseases, and clear land. Other functions of a controlled burn include clearing a buffer strip in the path of a wildfire; see backfire (17).

Conventional forest products — All commercial roundwood products except fuelwood. Includes boards, dimension lumber, pulp, and paper products (35).

Conversion—Transformation of a forest from one forest type to another, favoring a particular species or group of species through practices such as cutting, planting, or weeding.

-Process of sawing or otherwise changing the shape of timber.

-Transformation of timber into any kind of product (17).

Coppice-In silviculture, a tree cutting method in which renewal of a newly cutover area depends primarily on vegetative reproduction like sprouting (17).

Coppice regeneration-Ability of certain hardwood species to regenerate by producing many new shoots from a cut stump (35).

Cord-Any timber product delivered to a receiving facility in short-length form, 8 feet, or less, and intended for use as a raw material in the manufacture of pulp and pulp products; a cord is approximately 5,200 pounds for pine, 5,400 pounds for soft hardwood, 5,600 pounds for mixed hardwood, and 5,800 pounds for hard hardwood. Provisions do not apply to pulpwood damaged by insects or other causes, or to timber sold in bulk on the stump (14).

-Unit of measure of stacked wood that measures 4 by 4 by 8 feet or 128 cubic feet of wood, bark, and empty space within the stack (22).

Cords per man-hour-Quotient derived by dividing the total number of cords that a crew produces by the number of man-hours required for the production (8).

Core-Remaining wood after a veneer peeling operation is completed.

-The center section of wire rope, made of wire, hemp, or polypropylene (24).

Corduroy-R build a road by cross-laying it with saplings or small poles (8).

Corduroy road-Road or pathway that has logs or poles placed crosswise to the road direction to act as a firm surface for hauling or skidding logs from the cutting area to the landing (12).

Cordwood-Wood that is cut in short lengths, usually measured in cords and commonly used as fuel. Applies also to other products measured in cords (17).

Corks-See calks.

Corner--To cut through the sapwood on both sides in felling trees to prevent splitting (24).

Corridor skidding-Logging procedure using cable yarders in which narrow clearcuts are made through a stand. Cables are strung in these clear-cut corridors to transport logs from the woods to the landing. Between corridors only a portion of the trees in the stand are removed, and these harvested trees are skidded to the corridor (17).

Cost of capital-Investment required to create and maintain productive capital (22).

Counter knives-See portable chipper terms.

County-See ownership classes.

Cover type-Category of forest defined primarily by its vegetative composition and/or locality factors (17).

Cradle-Large metal brackets or a wood framework made to hold small chunks, poles, or pieces of pulpwood being bundled for transport (19).

-Frame in which individual bolts are towed (19).

Crane-Mobile machine mounted on a turntable on wheels or crawler tracks for hoisting material (22).

Crawler—Tractor operating on continuous treads instead of wheels (22).

-Refers to an arch on the same type of treads (22).

Creaming-Logging operation where only the best trees in the stand are cut (24).

Crib-Pen of short logs assembled cabin style. When a crib is filled with rocks it can be used as a pier to support certain types of bridges (8).

Crook-Abrupt bend in a tree or log (24).

Crop tree-Any tree forming or selected to form a component of the final crop. The tree is usually selected when the stand or plantation is young (26).

Cross cut-Wood cut across the grain (8).

Cross-cut saw-Saw designed specifically to cut wood across the grain (8).

Cross-ditch-Shallow channel laid diagonally across the surface of a road so as to lead water off the road and prevent soil erosion. Also known as a water bar (17).

Crosshaul-Loading logs by rolling them with a cable (22).

-One end of a line is passed over the load, around the log to be loaded, and then fastened to the load.

Pulling on the other end of the line causes the log to roll onto the load (8).

Crossing-the-lead-Timber—felled across rough terrain or across other felled timber; this is a major cause of breakage in large timber (10).

Cross support-Lateral line—used to provide intermediate support for a multispan skyline. Also known as support line and jack line (32).

Crotch-Small sled, without a tongue. Often made from the natural fork of a tree and used as an aid in skidding logs. Also known as an alligator (8).

Crotch line—Loading method that uses two lengths of rope suspended from the end of the loading line and terminating in the end hooks (22).

Crown—Upper part of a tree, including the branches and foliage (28).

Crown class—All trees in a stand whose tops or crowns occupy a similar position in the canopy or crown cover (28).

—Class into which the trees forming the crop or stand may be divided on the basis of both their crown development and crown position relative to the crowns of adjacent trees and the general canopy. Also the trees falling into such a class (26).

Crown cover—Ground area covered by a crown, as delimited by the vertical projection of its outermost perimeter (26).

Crown density—Thickness, both spatially (depth) and in closeness of growth (compactness) of an individual crown as measured by its shade density. Collectively, crown density should properly be termed canopy density, as distinct from canopy cover (26).

Crown height—Vertical distance of a standing tree from ground level to the base of the crown, measured to the lowest live branch whorl or to the lowest live branch (excluding epicormics), or to a point halfway between the two (26).

Crown length—Vertical distance of a standing tree from the tip of the leader to the base of the crown, measured to the lowest live branch whorl or to the lowest live branch (excluding epicormics), or to a point halfway between the two (26).

Crown length ratio—Of a standing tree, the ratio of crown length to tree height (26).

Crown thinning—Removing superfluous live growth in a tree crown to admit light, reduce weight, and lessen wind resistance (26).

Cruise—Survey of forest land that includes the location, volume, species, size, and quality of timber stands (24).

—Estimate obtained in such a survey (8).

Cruiser—One who conducts surveys of timber land. Also known as an estimator (8).

Cubic scale—Estimate of the cubic-foot volume of wood fiber in a tree, log, or other wood product (17).

Cull—Tree—or log that is unmerchantable because of defects (9).

—Logs that are rejected or parts of logs deducted in measurement because of defect (8).

Culmination of the mean annual increment—Point in the growth cycle of a tree or stand at which the mean annual increment for height, diameter, basal area, or volume is at a maximum. At this point **M.A.I.** (mean annual increment) equals **P.A.I.** (periodic annual increment) (17).

Cunit—Unit of volume consisting of 100 cubic feet (22).

—Unit of measure or stacked pulpwood that equals 100 cubic feet of solid wood (does not include bark or air volume) (6, 24).

Cut—One season's output of logs (8).

Cutover—Land that has previously been logged (12).

Cutter—One who fells, limbs, tops, and/or bucks trees (24).

Cutting—Process of felling trees (24).

—Area on which the trees have been, are being, or are to be cut (8).

Cutting unit—Area of timber designated for harvest (32).

Cycle—Complete set of operations or tasks that is repeated (20).

D

Day rate—Method of paying loggers by the day or hour instead of by the piece (9).

D.b.h.—Diameter at breast height (24).

Deadening—Area on which timber has been killed by fire, flooding, insects, or disease (19).

Deadhead—In transport, a vehicle traveling outbound or inbound without a load (12).

Deadman—Anchoring device buried in the ground to which a guy or anchor line is attached. Also called anchor log (24).

Dealer—See pulpwood dealer.

Debarker—Machine for removing bark from logs or bolts (24).

—Machine used to remove the bark from roundwood prior to processing into chips, lumber, or other wood products (8).

—See harvesting machine classifications, single function machines.

Debarking—See harvest functions.

Deck—Pile of logs on a landing.

—Area or platform on which wood is placed (24).

—See landing.

Defect—Crook, conk, decay, split, sweep, or other injury that decreases the amount of usable wood that can be obtained from a log (19).

Deflection—Vertical distance between the chord and the skyline, measured at **midspan**; frequently expressed as a percentage of the horizontal span length (22).

Defoliators—Insects that destroy foliage.

—Chemicals that cause plants to drop their leaves (17).

Degrade—Any defect that lowers the grade or quality of a log (17).

Density—See stand density.

Dendrology—Study and identification of trees (12).

Delay time—See machine time, scheduled operating time.

Deimber—See harvesting machine classifications, single function machines.

Delimber buck—See harvesting machine classifications, multifunction machines.

Delimber buncher—See harvesting machine classifications, multifunction machines.

Delimber slasher—See harvesting machine classifications, multifunction machines.

Delimber slasher buncher—See harvesting machine classifications, multifunction machines.

Delimbing—See harvest functions.

Delimbing gate—Metal grid used with a skidder for removing limbs (23).

Depletion allowance—Deduction from taxable income derived from a wasting asset. The Internal Revenue Code of the United States permits the calculation of depletion allowances either on the basis of a percentage of the gross income from the property in question or on a per-unit-of-product basis. Depletion differs from depreciation in that the asset subject to depletion cannot be replaced, a mine or an oil field cannot be replaced in the same manner that a factory or machine can be replaced (17).

D.g.l.—Diameter at groundline.

Diameter at breast-height—Diameter measure of a tree at 4.5 feet above the ground level. Determination of ground level varies regionally; it may be average ground level or highest ground level (24).

Diameter at ground line—Diameter measure of a standing tree at the estimated cutting height.

Diameter classes—Classification of trees based on diameter outside bark measured at d.b.h. In forest surveys, each diameter class encompasses approximately 2 inches: the **6-inch** class would include trees 5.0 through 6.9 inches in d.b.h. (33).

Diameter inside bark—Diameter measurement of a standing tree or log in which the estimated or actual thickness of the bark is discounted (12).

Diameter limit—Maximum diameter of trees to be cut, as in a timber sales contract (19).

Diameter outside bark—Measurement of tree diameter in which the bark is included (12).

Diameter tape—Tape measure specially graduated so that diameter may be read directly when the tape is placed around a tree stem or log (26).

D.i.b.—Diameter inside bark.

Dibble—Spade-like tool used to prepare planting holes for seedlings. Dibbles are most commonly used in the South but are also used in other areas for planting containerized seedlings (12).

Direct cost—Cost that varies in direct proportion to production and is attributable to a specific factor of production (26).

Directional felling—Predetermining the way a tree will land when it hits the ground. When shears are used, the wedge-shaped blade provides a lever that directs the tree into its lay (10).

Direct seeding—Spreading seeds over the forest seedbed by hand or machine.

—Practice used to assist or supplement natural seed fall and to achieve regeneration (17).

Dirt wiper—Mechanism on a hydraulic cylinder that cleans the cylinder shaft as it moves in and out (23).

Discharge spout—See portable chipper terms.

Discounted cash flow—In evaluating investment opportunities, the various costs and benefits anticipated in future years discounted to the present. These values are expressed by either (a) their difference, giving a net present value, (b) the benefit-cost ratio, or (c) calculating the discount rate that equates them, giving the internal rate of return (26).

Disturbance time—See machine time, scheduled operating time, operating time, delay time, nonmechanical delay time.

Diverter valve—Hydraulic valve that permits a change in the direction of flow of a fluid (23).

D.o.b.—Diameter outside bark.

Dock—See landing.

Dog—Short, heavy piece of steel, bent and pointed at one end, with an eye or ring at the other.

—Metal-toothed plate on a chainsaw (24).

Dog iron—Piece of iron rod turned at each end in a right angle. The ends are pointed so one can be driven into one edge of the block being sawed from a log and the other can be driven into the log itself to steady the block when sawing (19).

Dolly—See bumper.

Dominant trees—The most numerous and vigorous species in a mixed forest.

—Larger-than-average trees with well-developed crowns extending above the general canopy level and receiving full light from above and partial light from the side (20).

Donkey—Also known as a yarder (22).

—In cable yarding, A portable engine mounted on a vehicle and equipped with cable and winch drums (24).

—In logging, a portable engine mounted on a sled and equipped with a drum and cable. May be designated by the special use to which it is put, such as yarding, skidding, roading, or loading (8).

Dote—General term used to denote decay or rot in timber (24).

Double-action shear—Mechanized cutting tool for felling trees; works like a pair of scissors; one blade is slightly offset, but both work against the other. Some work edge to edge (9).

Double-drum winch-Winch consisting of two drums controlled **separately—one** for the dragline and the other for the haul-back line. Sometimes mounted on and powered by a tractor (26).

Doyle rule-Log rule used in the Eastern and Southern United States. Underestimates board footage in small logs and overestimates in large logs (26).

Drag-Single sled used in dragging logs. One end of the log rests on the sled, the other drags on the ground (22).

- Device for leveling roads (24).

- Load of logs or trees being skidded (8).

Drawbar horsepower-Tractor's flywheel horsepower, minus friction and slippage losses in the drive mechanism and the tracks or tires (22).

Draw shear-carrier-mounted, single-action, anvil shear used in mechanized cutting operations. Blade is drawn through the tree, toward the carrier (9).

Dray-Sled used for yarding logs (24).

Drum-See winch.

Drum barrel-Spool around which cable is wound (22).

Drum **debarker—See** harvesting machine classifications, single function machines: debarker.

Duff-Partially decomposed organic material of the forest floor beneath the litter of freshly fallen twigs, needles, and leaves (12).

Dummy-Dee rigged to raise a spar tree for use in yarding (22).

E

Earned harvest-Timber management concept used by the USDA Forest Service.

- Allows the timber manager an immediate increase in the allowable cut when the manager applies intensive management techniques that will accelerate future timber growth (12).

Ecology-Study of plants and animals in relation to their physical and biological surroundings (17).

Ecosystem-Complex ecological community and environment forming a functional whole in nature (12).

Embedded grit-Grit that is embedded in wood chips in the process of whole-tree chipping. This grit may be extremely difficult to remove when using chips in pulp **and paper** manufacture (3).

Enclosed cab-Cab suitable for an all-weather operation, may be heated or air conditioned (23).

End hooks-Pointed hooks placed against the end of the log for loading (22).

End mark-See mark (8).

Energy chips-Whole-tree chips used for energy (4).

Energy wood-Wood that has been delivered to pulp and paper mills, specifically for burning in boilers (3).

- Wood to be utilized for heat or other energy products. Includes forest, industrial, urban, and other wood waste, as well as whole-tree chips (4).

Estimate--See cruise (8).

Estimator-See cruiser (8).

Even-aged-Stand of trees in which there are only small differences in age among the individual trees (28).

Even-aged **management—Silvicultural** system in which the individual trees originate at about the same time and are removed in one or more harvest cuts, after which a new stand is established (33).

Evenflow—Same amount of timber produced annually for an indefinite, extended period of time from a natural forest or other unit of land (17).

Experimental plot-Area of ground laid out to determine the effects of a certain method of treatment.

- Major area-unit of an established experimental study requiring recurrent examination, often divided into subplots (17).

Exposure-!% aspect.

External yarding distance-Slope distance from the landing to the farthest point within the cutting unit boundary (22).

Eye splice-Loop formed by bending a rope's end back and splicing it into the line (22).

F

Face-Side of a hill or mountain being logged.

- One side of a tree, log, or cant.

- Standing timber adjacent to a clear-cut **area**.

- Section of wood sawn and removed from a tree's base (24).

Face cord-Sometimes used in measuring firewood, a face cord is 4 feet high by 8 feet long but only as deep as the **length** of the individual firewood pieces. Thus a face cord may be 4 feet by 8 feet by **16 inches** and contain one-third the wood volume of a pulpwood or standard cord (12).

Fairlead-Device containing pulley wheels or rollers used so that the winch can pull in the cable from any direction without damage (26).

Fall block-Block which, in tight-skyline systems, can be lowered to pick up loads on the ground and then raised as required for hauling them onto the landing. The block is long and narrow, with the pulley wheel(s) at the top, and balanced so that most of the weight is at the bottom (26).

Faller-One who fells trees. Also known as a feller (24).

Falling wedge-Wedge used to throw a tree in the desired direction (24).

Fan-See portable chipper terms.

Farmer owned-See ownership classes.

Favorable grade-Gradient that slopes downward in the direction of a loaded log truck travel (22).

Feed plate-See portable chipper terms.

Feed rate-See portable chipper terms.

Feller-See faller.

Feller buncher—See harvesting machine classifications, multifunction machines.

Feller chipper—See harvesting machine classifications, multifunction machines.

Feller delimeter—See harvesting machine classifications, multifunction machines.

Feller delimeter buncher—See harvesting machine classifications, multifunction machines.

Feller delimeter slasher buncher—See harvesting machine classifications, multifunction machines.

Feller delimeter slasher forwarder—See harvesting machine classification, multifunction machines.

Feller forwarder—See harvesting machine¹ classifications, multifunction machines.

Feller skidder—See harvesting machine classifications, multifunction machines.

Felling—See harvest functions.

Ferrule—Metal band or socket in which the terminal of a wire or wire rope is fastened securely (32).

Fiber—General term for any long, narrow cell of wood.
-Wood volume produced by a tree or trees that can be converted into wood products, such as lumber, paper, or cardboard. Also known as pulpwood (17).

Field test—Experiment conducted under field conditions. Ordinarily less subject to control than a formal experiment; it may also be less precise. Also known as a field trial (28).

Fifth wheel—Weight-bearing swivel mounted over the driving axles of a truck tractor to attach a trailer (20).

Figure 8—Method of wrapping a choker around two logs whose ends are together, but they are lying in different directions, so that when yarded they will skid together (19).

Financial rotation—Rotation of tree crops determined solely by financial considerations (which are related to biological production potential) in order to obtain the highest monetary values over time, in terms of optimum net present value or return on investment (17).

Fine residues—Residues not suitable for chipping, such as sawdust, shavings, and veneer clippings (33).

Firebreak—Space cleared of flammable material to stop and/or check creeping or running fires (28).
-Any natural or constructed barrier utilized to segregate, stop, and control the spread of fire or to provide a control line from which to work (17).

Fire danger—Measure of the likelihood of a forest fire, based on temperature, relative humidity, wind force and direction, and the dryness of the woods (12).

Fire hazard—Condition of fuel on the ground, particularly slash (19).

Fire line—Cleared area extending down to mineral soil that surrounds a fire to prevent the fire from reaching fresh fuels (19).

Fire trail—Cleared area constructed around logging slash or other fire hazards in order to prevent the spread of fire to this hazardous material (17).

Firmwood—Sound or solid wood in a log suitable for either chips or solid wood products such as lumber or

veneer. Burnt wood, voids, and soft rots are not considered **firmwood** (17).

First growth—Timber from a forest that has not been previously logged. Also known as virgin timber (19).

Fixed costs—Operation costs that will remain relatively constant for all levels of output (22).

Flagging—Colored plastic ribbon attached to trees or stakes to make boundaries, stakes, and other markers **visible** (20).

Flotation—Tractive ability of the transport device to resist **sinkage** into the medium being traversed (7).

Flume—Trough of water used to convey wood (24).

Forest—Area managed for the production of timber and other forest products or maintained as wood vegetation for such indirect benefits as protection of catchment areas or recreation (26).

Forestation—Establishment of a forest, naturally or artificially, on an area, whether previously forested or not (26).

Forest economics—Generally, that branch of forestry concerned with the forest as a productive asset subject to economic principles (26).

Forest floor—General term for the surface layer of soil supporting forest vegetation; includes all dead vegetation on the mineral soil surface in the forest as well as litter and unincorporated humus (17).

Forest industry—See ownership classes.

Forest land—See land-use classes.

Forest management—Generally, the practical application of scientific, economic, and social principles to the administration and working of a specific forest area for specified objectives (26).

Forest practice—Any activity that enhances and/or recovers forest growth or harvest yield, such as site preparation, planting, thinning, fertilization, and harvesting.

-Road construction or reconstruction within forest lands for the purpose of facilitating harvest or forest management.

-Any management of slash resulting from the harvest or improvement of tree species (17).

Forest residuals—Sum of wasted and unused wood in the forest, including logging residues; rough, rotten, and dead trees; and annual mortality (35).

-Unmerchantable material normally left following conventional logging operations other than whole-tree harvesting (3).

Forestry—Generally, a profession embracing the science, business, and art of creating, conserving, and managing forest, and forest lands for the continuing use of their resources, materials, and other forest products (26).

Forest type—Classification of forest land in terms of potential cubic-foot volume growth per acre at the culmination of mean annual increment (C.M.A.I.) in fully stocked natural stands (33).

-Classification of forest land based on the species forming a plurality of live-tree stocking **Type** is **deter-**

mined on the basis of species plurality of all live trees that contribute to stocking (33).

Forwarder-See harvesting machine classifications, single function machines.

Forwarding-See harvest functions.

Front end loader-Wheeled or tractor loader, with a bucket or fork hinged to lifting arms, that loads or digs entirely at the front end (20).

—**Track** or rubber-tired machine equipped with forks (22).

Frost crack-Radial, longitudinal split in the wood of a tree, generally near the base of the bole, caused by internal stresses due to extremely cold weather (I 7).

Fuelwood-Wood salvaged from mill waste, cull logs, and branches; used to fuel fires in a boiler or furnace (12).

Full tree-See whole tree.

Fully stocked stands-See stocking classes.

Fungicide-Chemical that kills fungi; used to control **fungal** diseases in greenhouses and nurseries (I 7).

G

G.C.W.—Gross combination weight.

Gin Pole-Erect pole with guys, 30 to 50 feet in height, leaning so that a loading block hung at the top is directly over the point where the truck will be spotted for loading (22).

Girdle-To encircle a tree with ax cuts or a saw kerf to sever the bark and cambium layer, thus killing the tree (24).

Gland hand-Hose end and trailer connection for attaching an air line to a trailer (23).

Grade-Established quality or use classification of timber.

—Slope of a surface, such as a roadway.

—The elevation of a real or planned surface or structure.

—Completed base for a road.

—**To** reduce ground to a level or sloped surface (20).

Gradient-Amount by which the grade increases or decreases in a unit of horizontal distance (21).

Grap hook-Hook with a narrow throat adapted to cover a link on a chain and not slip (24).

Grap **link—Pear-shaped** link used to connect chain (24).

Grapple-Hinged mechanism capable of being opened and closed; used to grip logs during yarding or loading (22).

—Hinged set of jaws, capable of being opened and closed, used to grip logs during yarding or loading (20).

—Hydraulically operated arms, used to either lift and load, or lift and skid, trees. May be of the following types: swivel, stationary, self-centering, parallelogram, or bunk (23).

Grapple skidder-See harvesting machine classifications, single function machines: skidder.

Grapple yarding-Cable yarding with grapple instead of chokers (22).

Gravity logging-Any cable system that depends on the force of gravity for downhill travel of the carriage (20).

Green-Wood of a live tree, or a tree that has recently been felled, or wood that has lost very little moisture since the time it was felled (26).

Green strip-Uncut strip of timber left along streams and roads. Also known as buffer strip, leave strip, streamside management zone (17).

Grit-Contaminant that may be found in whole-tree chips. Presence of grit above a specified percentage makes chips undesirable for pulp and paper manufacture unless removed. Usually found in bark of trees prior to chipping, or may be accumulated as the trees are skidded through wet dirt or mud (3).

Gross **area—See** land-use classes.

Gross combination weight-Weight of tractor, trailer, and maximum load (24).

Gross scale-Measurement of log volume in which no deduction is made for defect (17).

Gross vehicle weight-Weight of vehicle, including payload (24).

Ground-Territory on which a logging operation is being conducted (19).

Ground clearance-General term for removing **un-**wanted vegetation, slash stumps, roots, and stones from a site before afforestation or reforestation.

—Generally, the distance by which a vehicle's lowest point, exclusive of the wheel assembly, clears the ground; measured perpendicularly from that point to a plane surface on which the vehicle rests (26);

Ground-lead logging-Cable yarding method in which the main line lead block is hung on a stump. The logs are not lifted from the ground (22).

Ground length-Extent to which the ground around a tree is broken by ridges, gullies or **swells, rock** outcrops, and sharp slope changes (10).

Ground pressure-Weight of a vehicle under specific conditions, transmitted to the ground and computed for the per-unit area of contact between ground and wheels or track shoes (26).

Ground skidding--Pulling logs parallel to the ground without using an arch or **fairlead** to raise the forward end (20).

Group felling-Felling method used to orient the butts of small-diameter, tree-length timber in one direction for skidding (9).

Growing stock-Sum (by number or volume) of all the trees in a forest or in a specified part of the forest (22).

Growing-stock trees-See tree classes.

Growth-Increase in diameter, basal area, height, and volume of individual trees or stands during a given period of time. Also known as increment (17).

Grubbing-Removal of stumps from the ground by any of several methods or combination of methods (22).

Guiding rate of return-The rate attached to the use of capital that guides a firm in its choice of investments.

In general, investments that promise a rate of return less than the guiding rate are rejected after due allowance for things such as risk (26).

Guillotine shear—Type of carrier-mounted, single-action, anvil shear used in mechanized cutting where the blade is pushed through the stem and away from the carrier, instead of being pulled as in the draw shear (9).
Guy-Rope, chain, or rod attached to brace, steady, or guide (22).

G.V.W.—Gross vehicle weight.

Gypso (gypo)—Independent logger who usually runs a small-scale logging operation.

-a small, independent sawmill or other wood related operation.

-personnel paid on piecework basis, such as a "gypso" car loader or a "gypso" trucker (12).

H

Half-track-Vehicle moved by a pair of short, endless articulated belts, called tracks, driven by tractor tires. Steering is by a pair of ordinary wheels in front. The whole vehicle is termed a half-track (26).

Hang-up—In felling, to have a tree catch on another so that it becomes lodged.

-In skidding, to get a load stuck in the mud or behind some obstacle (24).

Hardwood—Generally, a deciduous broad-leaved species of trees (24).

—**Dicotyledonous** trees, usually broad-leaved and deciduous (33).

Harvester—See harvesting machine classifications, multifunction machines.

Harvest functions—

Bucking—See slashing (in this section).

Bunching—**Gathering** and arranging trees or parts of trees in small piles.

Chipping—Breaking or cutting trees into small pieces of controlled fiber length.

&barking—; Removing the outer protective layer (bark) from trees or parts of trees.

Delimbing—**Removing** branches from trees.

Felling—Cutting or uprooting standing trees, causing them to fall as a result of the cutting or uprooting.

Forwarding—**Transporting** trees or parts of trees by carrying them completely off the ground rather than by pulling or dragging them along the ground. Also known as prehauling.

Loading—Picking up trees or parts of trees from the ground or from a vehicle, transporting them, and then piling them into another vehicle (such as a highway logging truck or rail ear).

Piling—**Picking** up tree-length logs or bolts and depositing them in large piles so that the logs are horizontal and parallel to each other and the ends are approximately in the same vertical planes.

Skidding—Transporting trees or parts of trees by trailing or dragging them.

Slashing—Cutting felled and limbed trees into lengths. Also known as bucking.

Topping—Cutting off the top of a tree at a predetermined, minimum diameter.

Yarding—Initial hauling of a log from the stump to a collection point.

Harvesting—Removing merchantable trees (contrasts with cuttings, which remove immature trees) (17).

Harvesting machine classifications (27) — The

mobile machinery used in forestry is classified into major types by the specific functions or combination of functions performed. Further classification may be required to differentiate between machines with basic conceptual differences that effect recognition of performance but perform the same function(s). One or more of the following subclassifications may be used as necessary. Multifunction machines are named by a composite of the functions, listed in the order that the functions are performed.

— Single function machines:

Bucker—See slasher (in this section).

Chipper—Designed to chip whole trees or parts of trees.

Debarker—**Designed** to remove the bark from trees.

Drum &barker—Used primarily to remove bark from pulpwood. Bolts tumble together forcibly and repeatedly in their passage through a large drum, rubbing off bark as they roll against each other and against the corrugated interior of the drum. The drum's corrugated interior keeps the bolts tumbling as the drum rotates, while gravity and the force of additional incoming bolts force the wood through.

Ring &barker—Used primarily to remove bark from saw logs and veneer bolts. An **infeed** conveyor advances the log longitudinally into the feed rollers, which automatically center the log in the rotating mechanical ring. The ring has five crescent-shaped fingers that open automatically as the feed rollers force the log against them and the log advances through the rotating mechanical ring.

Delimber—**Self-propelled** or mobile machine designed to remove all limbs from trees with flailing chains or knives.

Feller—**Self-propelled** machine designed to fell standing trees.

Forwarder—**Self-propelled** machine, usually self-loading, designed to transport trees or parts of trees by carrying them completely off the ground.

Lou&r—**Self-propelled** or mobile machine with grapple and supporting structure designed to pick up and discharge trees or parts of trees for the purpose of piling or loading. Operation may be swing-to-load, slide-to-load, or travel-to-load. Also known as hydraulic loader or knuckleboom if it swings to load and has hydraulically activated boom members.

Mobile yarder—Self-propelled or mobile machine designed to perform cable logging with the use of a tower that may be integral to the machine or a separate structure.

Skidder—Self-propelled machine designed to transport trees or parts of trees by trailing or dragging.

Cable skidder—Uses a main winch cable and cable chokers to assemble and hold a load.

Clam-bunk skidder—Uses an integrally mounted loader to assemble the load and a clam or top-opening jaws to hold it.

Grappleskidder—Uses a grapple or bottom-opening jaws to assemble and hold a load.

Slasher—Mobile machine designed to cut felled trees to a predetermined length with a shear or saw. Also known as a buckser.

Swath cutter—Self-propelled harvesting machine capable of continuous movement while simultaneously felling multiple stems across a **6- to 8-foot** wide swath (35).

— Multifunction machines:

Delimber buckser—See delimber slasher (in this section).

Delimber buncher—Used to delimb trees and arrange logs in piles on the ground.

Delimber slasher—Used to delimb and slash trees. Also known as a delimber buckser.

Delimber slasher buncher—Used to delimb and slash trees and arrange logs in piles on the ground.

Feller buncher—Self-propelled machine designed to fell standing trees and arrange them in bunches on the ground. May travel-to-bunch or swing-to-bunch.

Feller chipper—Used to fell and chip whole trees.

Feller delimber—Self-propelled machine designed to fell and delimb trees.

Feller delimber buncher—Self-propelled machine designed to fell, delimb, and arrange the trees in bunches.

Feller delimber slasher buncher—Self-propelled machine designed to fell, delimb, and slash trees and arrange tree parts in piles on the ground.

Feller delimber slasher forwarder—Self-propelled machine designed to fell, delimb, and slash trees and carry tree parts to a landing.

Feller forwarder—Self-propelled, self-loading machine designed to fell standing trees and transport the stems by carrying them completely off the ground.

Feller skidder—Self-propelled, self-loading machine designed to fell standing trees and transport them by skidding.

Harvester—Self-propelled multifunction machine that may be capable of operating as a swath cutter but also performs chipping and/or forwarding functions in addition to felling (35).

Limited-area feller buncher—Feller-buncher with a shear mounted on a knuckleboom, allowing the machine to reach and fell several trees while remaining stationary (35).

Processor—Multifunction machine that does not fell trees but handles two or more subsequent functions.

Slasher buncher—Used to cut logs to predetermined lengths and arrange them in piles on the ground.

Haul—Conveying wood from a loading point to an unloading point.

—The distance wood is transported (24).

Haul-back block—Block used to guide the haul-back line (26).

Haul-back tine—Rope used in cable logging to haul the main line and its fittings back to the point where the logs are to be attached (24).

Haywire operation—Contemptuous term for logging operation that has poor equipment (24).

Head rig—Principal machine in a sawmill, used for the initial breakdown of logs by sawing along the grain. Logs are first cut into cants on the head rig before being sent on to other saws for further processing. Also known as head saw (17).

Head saw—See head rig.

Head spar—See head tree.

Head tree—Spar tree at the landing of a skyline logging operation. Also known as head spar (32).

Heel boom—Loading boom that uses tongs to heel or force one end of a log against the underside of the boom (22).

—**Type** of loader that braces **one** end of a tree length or long log against a plate on a boom to control and carry it (24).

Heel tackle—System of lines and blocks used to tighten the skyline (32).

Herbicide—Chemical used to kill or retard the growth of plants; weed killer (17).

Highball—To work at a high rate of speed, usually smoothly and efficiently. A fast, skilled logging show is often said to be a “highball show” (12).

High grade—Good quality timber.

—**To** cut the cream of the crop; take only the best trees out of the stand (19).

High-lead logging—Wire rope system that involves yarding in logs or trees by means of a rope passing through a block at the top of the head spar (24).

High rigger—Logger who tops trees and rigs them with guys, blocks, and lines (32).

High stump—stump that is higher than a specified standard (17).

Highway truck—Truck designed to haul a load that does not exceed legal highway limits (20).

Hitchhiker—See pogo stick.

Hoedag—Hoelike tool with an elongated blade used for planting trees (17).

Hog—Machine used to grind wood into chips for use as fuel or for other purposes; the wood used is usually waste wood unfit for lumber or other uses (12).

—**Coarse** wood chips to be burned as a fuel (20).

Hogged fuel—Fuel made by grinding waste wood in a hog; a mix of wood residues such as sawdust, planer

shavings, and sometimes coarsely broken-down bark and solid wood chunks produced in the manufacture of wood products and normally used as fuel (17).

Hog wood-Pulpwood logs to be chipped in a hog (19).

Holding wood-When felling timber, this is the part of a tree left uncut until the end in order to hold the fall of the tree in the desired direction (19).

Hooker-In logging, the foreman of a yarding crew. Also known as a hook tender.

-Head man of the choker crew on a skidder (17).

Hook tender-See hooker.

Hot deck-Pile of logs from which logs are hauled as soon as they are yarded. Also known as hot landing (20).

Hot landing-See hot deck.

Hot load-See hot log.

Hot log-lb log and load out directly without intermediate storage or cold decking. Also known as hot load (20).

Hot logging-Logging system operation in which the logs are not stored or decked, but loaded onto a truck as soon as they are skidded to a landing (24).

Hydraulic barking-Removal of bark from round timber, such as logs, bolts or billets, by high-pressure jets of water as the pieces are mechanically rotated in a closed chamber (26).

Hydraulic loader-See harvesting machine classifications, single function machines: loader.

Hydric-Soil that is saturated for sufficient periods of time to produce anaerobic conditions (II).

Hydrophyte-Plant typically found in wet areas or in water where oxygen deficiencies occur periodically (11).

Hyster-A winch (19).

I

Idle time-See machine time, scheduled nonoperating time.

Increment--See growth.

Increment borer-Tool used to take a small core from the bole of a tree to determine growth rate (17).

Independent-One who logs and sells his output on the open market; not associated with a mill or under company or dealer contract (19).

Indian-See ownership classes.

Industrial wood-All roundwood products except fuelwood (33).

Infeed throat-See portable chipper terms.

Injectors-Metering devices with a diesel engine that regulate the fuel flow (23).

In-shift moving time-See machine time, scheduled operating time, delay time, nonmechanical delay time.

In-shift repair time-See machine time, scheduled operating time, delay time, mechanical delay time.

In-shift service time-See machine time, scheduled operating time, delay time, mechanical delay time.

Integrated logging-Logging operation that segregates and delivers a variety of products to mills and processors that will use them to the best advantage (24).

Intensive forest management-utilization of a wide variety of silvicultural practices, such as planting, thinning, fertilization, harvesting, and genetic improvement, to increase the capability of the forest to produce fiber (17).

Interim forest-Forest that exists or will exist until conversion to a target forest is complete. An interim forest may develop under intensive forest management, and may have excellent stocking, but it does not necessarily represent the forest desired at some future time. Also known as a transition forest (17).

Interlocking yarder-Device that allows the main and haul-back drums to be operated together as a single unit to maintain running line tension (22).

Intermediate support-Spar tree or cable sling located between the head spar and tail spar to which a tree jack is attached to support a multispan skyline (20).

Intermediate support spar-Spar tree located between the head spar and tail spar to support a multispan skyline (22).

Intermediate trees-Trees with small, crowded crowns below (but extending into) the general canopy level; these trees receive a little light from above and none from the side (20).

International log rule-Formula rule that allows a 1/2-inch taper for each 4 feet of length and allows for a 1/8-inch shrinkage for each inch of board thickness. Rule used by the USDA Forest Service (26).

International 1/1-inch scale-Log scale modification of an earlier rule using a 1/8-inch kerf, based on an analysis of the loss of wood fiber incurred in the conversion of saw logs to lumber. One of the few rules incorporating a basis for dealing with log taper.

Intolerant-&e relatively incapable of developing and growing normally in the shade of, and in competition with, other trees (17).

Inventory-See management-volume inventory.

J

Jack-Device for suspending a loading-line lead block from a skyline.

Jack line-See cross support.

Jackpot-Unskilled example or display of logging work (22).

-Contemptuous expression applied to an unskilled piece of work in logging, particularly in felling, where several trees are lodged and/or crisscrossed (6).

Jammer-Lightweight, two-drum yarder usually on a truck with a spar and boom; may be used for both short distance yarding and loading (22).

-Frame mounted on a sled or vehicle for loading logs (24).

Jammer logging-Cable logging system generally restricted to one skidding line and used for winching logs up to 300 feet from the cutting area to a log collection point (17).

Joystick-Hydraulic control lever that can be operated in up to four directions, controlling a number of functions through one hydraulic valve (23).

Jumping-Moving a spar tree in an upright position to a better location at the landing (22).

Junkbutt-Badly splintered end of a felled tree that has been cut back to sound wood (12).

Juvenile wood-Inner core of xylem surrounding the pith. The cells are smaller and less structurally developed than those of the outer xylem. The time during which juvenile wood is formed is termed the juvenile period. This period varies among individuals, with species, and with environmental conditions (26).

K

Kerf—Width of the cut made by a saw blade (22).

KG blade-Blade on a crawler used to clear unwanted vegetation in preparation for planting tree seedlings (17).

Kingpin-Master link in a track.

-Also known as a fifth-wheel pin. This pin attaches the truck tractor to the trailer (23).

Kip-Unit of weight or force equal to 1,000 pounds (20).

Knuckleboom-Hydraulically operated loading boom whose mechanical action imitates the human arm (20).

-See harvesting machine classifications, single function machines: loader.

Kraft paper-Comparatively coarse paper particularly noted for its strength; unbleached grades are used primarily as a wrapping or packaging material.

-Paper made primarily from wood pulp produced by the sulfate pulping process (28).

L

Land area--See land-use classes.

Land **base**—**Acres** of forest land that are actually available for forest management. This involves future trends not only in forest growth but also in deletions from the land base (10).

Land **classification**—

Basal area per acre—**Land** class based on total basal area per acre.

Site class-Classification of forest land in terms of its inherent capacity to grow crops of industrial wood. Expressed in cubic-foot growth per acre per year.

Site index—**Expression** of the growing potential of a specific forest site based on the height of a free-grow-

ing dominant or codominant tree of a representative species in a forest of the same type at a specified age.

Stand age—**Age** of trees of the dominant forest type and stand-size class.

Landing-Cleared area in the woods to which logs are yarded for loading onto trucks for shipment to a processing plant. Also known as brow, deck, dock, or ramp (12).

-Usually flat ground to which logs are yarded, where they will be loaded on railroad cars or trucks; a collection point for logs.

-Center of operations on a logging operation (17).

Landing gear-Dollies or portion of a trailer that holds the trailer upright when it is not being supported by the truck tractor (23).

-Block or roller attached to a stationary object that guides the pull of a cable (6).

Land-use classes **(33)**—

Gross area-Entire area of land and water as determined by the Bureau of Census, 1960.

Forest land—**Land** at least 16.7 percent stocked by forest trees of any size, or formerly having such tree cover, and not currently developed for nonforest use.

Commercial forest land-Forest land capable of producing crops of industrial wood and not withdrawn from timber utilization by statute or administrative regulation. Included are areas suitable for growing crops of industrial wood and generally capable of producing in excess of 25 cubic feet per acre of annual growth.

Noncommercial forest land-Unproductive forest land incapable of yielding crops of industrial wood because of adverse site conditions. Also, productive forest land withdrawn from commercial timber use through statute or administrative regulation, or exclusively used for Christmas tree production.

Reserve forest land-Noncommercial forests that are productive but reserved for recreation or other nontimber uses (10).

Land area-Area of **dry** land and land temporarily or partially covered by water such as marshes, flood plains, streams, sloughs, and estuaries. Canals less than 1/8 mile wide, and lakes, reservoirs, and ponds smaller than 40 acres are included as land area.

Nonforest land-Land that has never supported forests.

-Land formerly forested where forest use is precluded by development for nonforest uses, such as cropland, improved pasture, residential areas, and city parks.

Lay-Position on the ground where a tree will fall when severed from the stump (10).

Layout-Logging plan.

-Position of the running lines in a cable yarding system (20).

Lead-Block or series of blocks or rollers attached to a stationary object to guide the cable that drags logs (32).

-Position of logs relative to the yarding distance.

Leaders-Growing shoots or sprouts of a plant or tree (26).

Lean-Degree and direction to which the tree leans from a perpendicular position (10).

Leave strip-Strip of uncut timber left between cutting units or adjacent to another resource such as a stream. Also known as a buffer strip, green strip, or streamside management zone (20).

Leave tree-Tree left standing after timber has been felled in a cutting unit (20).

Length of ground-See ground length.

Lift arms-Front-end loader arms that carry an attachment used for the purpose of lifting (23).

Limb-To remove the limbs from a felled tree (24).

-To cut branches from trees or logs (20).

Limbwood-Part of the tree above the stump that does not meet the requirement for saw logs or upper stem portions. Includes all live, sound branches to a 4-inch outside bark diameter minimum (33).

Line running-Locating, tracing, and marking of land ownership lines (17).

Live skyline-Skyline that can be raised and lowered during yarding to facilitate logging (32).

Loader-See harvesting machine classifications, single function machines.

Load factor-Average load or power output of an engine or machine, expressed as a percentage of its maximum capacity (20).

Loading-See harvest functions.

Loading jack-Rigging suspended from a spar tree guy line immediately above the line of haul and terminating in a loading block (26).

Leg-Eight-foot or longer tree segment (22).

-Length of tree suitable for processing into lumber, veneer, or other wood products (22).

-To harvest trees on an area (24).

Leg deck-Pile of logs on a woods landing or in a mill yard (24).

Logger-A person employed in the production of logs and/or wood from standing timber. Also known as a lumberjack (24).

Logging plan-As used in the eastern and western regions: layout, on a topographical map, of roads, landing, and setting boundaries of a logging area.

Logging residues-Unused portions of pole timber and **sawtimber** trees killed by land clearing, cultural operations, or timber harvesting (31).

-Unused portions of growing stock from trees cut or killed by logging (33).

Logging setting-Area to be logged; a block or strip.

-Management block or portion thereof, cut in any year.

-One continuous log production area or unit normally felled in one operation. One or more landings are located in this area (17).

Logging truck-Vehicle used to transport logs. A logging truck consists of a cab, containing the engine and a place for the driver to sit, and a trailer on which logs

are placed. The trailer usually has an adjustable carriage in order to accommodate loads of various lengths (12).

Log jack-Tool used to raise a log from the ground during bucking (24).

-Similar to a peavey, but with a flattened steel loop on the underside so when the hook fastens into a log on the ground and the handle is lowered, the log is jacked up and remains elevated on the jack (6).

Log rule-Table intended to show amounts of lumber that may be sawed from logs of different sizes under various assumed conditions (22).

Log scale-Measure of the volume of wood in a log or logs, usually expressed in board feet and based on various log scaling rules (12).

Long butt-Section cut from the bottom log of a tree and culled because of rot or other defect.

-To cut such a section from a log (17).

Long-line skidding-Term currently synonymous with skyline skidding.

-Gable system method of skidding logs to a landing from distances up to 1,200 feet away (17).

Long-span skidding-Cable system capable of skidding logs for 3,000 feet or more (17).

Long ton-British unit of weight equal to 2,240 pounds (17).

Longwood-Pulpwood 120 inches or more in length (22).

-Pulpwood over 10 feet long (20).

-Stemwood delivered in lengths that exceed 15 feet.

Longwood harvesting-Timber harvesting method in which harvested trees are moved to the landing either as whole trees or as topped and limbed tree-length logs. At the landing, further processing such as limbing, topping, bucking, chipping, or loading is carried out as necessary (35).

Lop-To cut limbs from standing trees (24).

LS2, LS3-Symbols that are used to denote a type of skidder tire and tread (23).

Lug tire-Tire with a cross tread and rather deep grooves (23).

Lumberjack-One who works in forests, performing any of a variety of jobs related to the harvesting of timber; most commonly used in the Northeastern United States and eastern Canada. Also known as a logger (17).

Lumber tally-Record of lumber giving the number of boards or pieces by size, grade, and species; often expressed in MBF (17).

M

Machine availability-See machine time.

Machine down-time-See machine time.

Machine rate-Cost per unit of time for owning and operating a logging machine or some other piece of

logging equipment (20, 22). In accordance with engineering practices, the rate is composed of fixed costs such as depreciation, interest, taxes, and license fee, and variable costs including fuel, lubricants, and repairs and replacement of components such as tires and wire rope.

Machine time—

Machine availability—Machine availability is expressed as a percent of the scheduled operating time during which a machine is not under repair or service. In other words, it is the percentage of the scheduled operating time during which the machine is mechanically fit and is itself capable of doing productive work. It is expressed by scheduled operating time minus mechanical delay time divided by scheduled operating time and multiplied by 100 (2).

Machine down-time—Time during which a machine cannot be operated in production or auxiliary work because of breakdown, maintenance requirements, or power failure (26).

Machine utilization—Machine utilization is expressed as a percentage of the scheduled operating time that is productive time. It is computed by productive time divided by scheduled operating time and multiplied by 100 (2).

Scheduled nonoperating time—Time when no production is scheduled for a machine.

Idle time—Scheduled nonoperating time during which a machine is not working, moving, under repair, or being serviced (2).

Out-of-shift repair time—Part of nonoperating time during which a machine is actually undergoing repair. Waiting time is not included here as in the in-shift repair time element (2)

Out-of-shift service time—Part of nonoperating time when a machine is actually undergoing service time. Does not include waiting time (2).

Scheduled operating time—Time when a machine is scheduled to do productive work. Time during which a machine is on standby as a replacement machine is not considered as scheduled operating time. When a machine is replaced, the scheduled operating time of the replaced machine is considered as ending when the replacement arrives on the job. Scheduled operating time of the replacement commences when it starts to move to the location of the machine it is replacing. Extension of the regular shift operation into overtime is considered as scheduled operating time (2).

Operating time—Time during this period can be either productive or delay time (5). **Delay time**—Sum of disturbance time, service time, and repair time (5).

Mechanical delay time—Part of scheduled operating time spent in repair or service during which a machine cannot work. It does not include replacement of oil filters and spark plugs as scheduled in a preventative maintenance program. Servicing is fueling, lubricating, and doing the work specified in a scheduled preventative maintenance program. When a machine

is being serviced while under repair, the time involved is to be classified as repair time, not service time. Repair and service time occur in both scheduled operating and nonoperating times (2).

In-shift repair time—Part of mechanical delay time when a machine is actually undergoing repair plus the time during which a machine is waiting to be repaired or for repair parts, mechanics, or facilities. Same as repair time (2).

Active repair time—Time during which actual repair work is carried out on the machine itself or a dismantled part of the machine (5).

Repair time—Sum of active repair time, waiting repair time, and time spent servicing the machine while undergoing repair (5).

Waiting repair time—Time during which the machine is waiting for a mechanic, spare parts, or repair equipment. Includes time for transporting the machine to and from the workshop (5).

In-shift service time—Part of mechanical delay time when machine is actually undergoing service plus the time a machine is waiting for service parts, mechanics, or repair facilities. Same as service time (2).

Service time—Time for normal service and maintenance (5).

Nonmechanical delay time—Part of scheduled operating time during which a machine is not doing productive work for reasons other than repair or service. This time may be subdivided by causes: weather or terrain conditions, waiting for another phase of an integrated operation, assisting other machines, and operator talking with visitors (2).

Disturbance time—Examples are: time spent for logging down, towing, detail planning, talking to supervisor, waiting for wood, and waiting for better weather (5).

In-shift moving time—That part of nonmechanical delay time during which a machine is moving or being transported. Includes the time taken to move or transport the machine between operating sites or between camp and site, assuming the machine is not under repair service. It does not include time spent moving between adjacent working positions on any one site (2).

Operational lost time—Time during which production is halted due to things such as operating conditions, nonavailability of auxiliary equipment, or using the machine in a nonproductive manner to assist other machines (2).

Personnel time—Part of nonmechanical delay time in which a machine lacks an operator or any other member of the machine crew (2).

P.M.H.—Productive machine hour.

Productive time—Part of scheduled operating time in which a machine is performing a function for which it was scheduled (2). Also, time spent in carrying

out the task; the sum of actual productive and other productive time (5).

Actual productive time-Time spent using the machine to carry out the actual task (5).

Otherproductive time-Time when the machine is carrying out tasks other than those for which it is intended (5).

S.M.H.—Scheduled machine hour.

Total time-Total elapsed time for the period under consideration; total time for a period of 1 week is 168 hours (7 days multiplied by 24 hours per day) (2).

Machine utilization-See machine time.

M.A.I.—Mean annual increment.

Main line-In cable yarding, the line used to bring logs to the landing.

—**On** a skidder, the winch line (24).

Main line block-Block on a spar through which the main line runs (32).

Main read-Road that supports a high level of traffic, usually well built and well designed (22).

Managed harvest-Estimated volume of timber on commercial forest land that could be cut annually for the next 10 years while improving tree stocking and bringing about a more even distribution of age classes. Annual managed harvest is considered separate from harvest cuttings and thinnings and is determined by computer using an area control system that specifies the number of acres to be cut annually (33).

Management-volume inventory-Computation of pertinent data, such as volume or basal area and increment and mortality of stands, to assess silvicultural opportunities (28).

Man-hour-Unit of work performed by one man in 1 hour (24).

Mark—To select and indicate (usually with paint) trees to be felled in a logging operation. Trees to be left may also be marked. Also known as end mark or brand (17).

Marking-Selecting and indicating, by a blaze or paint sport, the trees to be cut or left in a timber cutting operation (6).

Marlin spike-Iron tool that tapers to a point. Used to separate strands of rope (32).

Mat-Temporary roadway constructed of hardwood lumber.

Mature timber--Stand of trees that has attained an age of size that satisfies the primary economic goal for which it was managed (17).

M.B.F. (MBF)-Thousand board feet (20).

M.C.—Moisture content.

Mean annual increment—**Total** increment growth up to a given age divided by that age.

—Average growth per year (17).

Meandering line-Survey line at the high-water mark on navigable lakes and streams.

—Line at which continuous vegetation ends and sandy or muddy shore begins (17).

Measuring--Process of dividing the merchantable tree stem into segments of specified length for the purpose of bucking. Measuring a stand begins when a worker begins dividing the first tree into desired lengths and ends when the last tree has been measured (6).

Mechanical delay time—**See** machine time, scheduled operating time, delay time.

Mechanical harvesting-Cutting with mechanized equipment, such as the carrier-mounted shear or **feller-buncher**, instead of by hand with a power saw (9).

Mechanized logging-Logging in which most or all of the hand labor is replaced by machines; requires a large outlay of capital (17).

Medium stocked stands-**see** stocking classes.

Mensuration-In forestry, the measurement of both standing and harvested timber (12).

Merch-Merchantable.

Merchantable-Logs exceeding a minimum size and a minimum usable volume that are suitable for sale (20).

Merchantable top-Smallest utilizable top (10).

Merch @-Merchantable top (10).

Metric tons-Unit of weight equal to 1,000 kilograms.

—Approximately 2,205 pounds (12).

Miscellaneous Federal-See ownership classes.

Miscellaneous private—**See** ownership classes.

Mobile-Capable of being moved from one location to another (24).

Mobile harvester-**See** harvesting machine classifications, multifunction machines: harvester.

Mobile yarder-**See** harvesting machine classifications, single function machines.

Model-Theoretical abstraction, usually capable of mathematical manipulation, used to evaluate a problem or a subject of interest (22).

Moisture content-Amount of water present in a material such as wood or soil. Generally expressed as a percentage of the material's oven-dry weight.

—Amount of water in a material, expressed as a percentage of the material's total weight; used in the pulp and paper industry (17).

Molle—Circle of twisted strands of wire rope used as a temporary line to connect the eye splices of two lines.

—Ring of wire to replace a cotter key (22).

Mop-op-Mopping up.

Mopping up-Act of making a fire safe after it has been controlled by extinguishing or removing burning material along or near a control line (6).

Mortality-Number or sound wood volume of healthy trees that have died from natural causes during a specified period (33).

Mortality of growing stock-**See** quality classes.

Mortality of sawtimber—**See** quality classes.

Multifunction machines-**See** harvesting machine classifications.

Multiple entry-Entering a stand for commercial harvesting more than once in any one continuous rotation (17).

Multiple-use--Practice of forestry that combines two or more objectives (22).

Multiple-use forestry--Concept of forest management that combines two or more objectives, such as production of wood or wood-derivative products, forage and browse for domestic livestock, proper environmental conditions for wildlife, landscape effects, protection against floods and erosion, recreation, and protection of water supplies (17).

Multiple-use management--Management of land resources with the objective of achieving optimum yields of products and services from a given area without impairing the productive capacity of the site (33).

Multispan skyline--Skyline having one or more intermediate supports (22).

Multistem--Operation handling two or more stems at the same time (23).

Municipal--See ownership classes.

Muskeg--Tract of partly forested **peatland** supporting mosses, **shrubby** plants, and scattered trees (26).

N

National Forest--See ownership classes.

Natural regeneration-Renewal of the forest achieved either by natural seeding or from the vegetative reproduction of plants on the site (17).

Net annual growth-Increase in volume of trees during a specified year. Components of net annual growth include the increment of net volume of trees at the beginning of the specified year that survive to the year's end, plus the net volume of trees reaching the minimum sire class during the year, minus the volume of trees that died during the year, and minus the net volume of trees that become rough or rotten trees during the year (33).

Net annual growth of growing stock--See quality classes.

Net annual growth of sawtimber--See quality classes.

Net scale--Actual amount of merchantable wood contained in a log as opposed to the gross scale, which includes defect (9).

Noncommercial forest land--See land-use classes, forest land.

Noncommercial species--Tree species in which small size, poor form, or inferior quality is typical. These species do not normally develop into trees suitable for conventional forest products (35).

Nonforest land--See land-use classes.

Nonmechanical delay time--See machine time, scheduled operating time, operating time, delay time.

Nonstocked areas--See stand size classes.

Northern United States--Consists of the following States: Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, Vermont, Delaware, Maryland, New Jersey, New York, Pennsylvania, West

Virginia, Michigan, Minnesota, South Dakota, North Dakota, Wisconsin, Illinois, Indiana, Ohio, Iowa, Kansas, Kentucky, **Missouri**, and Nebraska (10).

Notch--To make an undercut in a tree, preparatory to felling it in a given direction. Also known as a box or an undercut (24).

Number one--'lop-grade log, such as number-one peeler, number-one saw log (19).

O

Off-highway truck--Truck designed to handle loads exceeding legal highway size and weight restrictions (20). These trucks are not driven on highways; they are used in logging operations conducted on other types of roads.

Old growth--Virgin timber.

--Growth in a mature forest (9).

Open-side carriage--Skyline carriage that opens on one side allowing it to travel over intermediate support jacks (32).

Open-top van--Van that can be loaded from above and is often covered by a tarp or mesh (23).

Operating costs--See variable costs.

Operating time--See machine time, scheduled operating time.

Operational cruise--Timber inventory that includes the estimation of timber volumes or other stand information on specific geographic areas for specific purposes, as contrasted with more broadly based estimates for forestwide planning.

--Inventory survey of a logging unit for developing logging plans and production budgets.

--Seedling surveys for regeneration stocking and precommercial thinning cruises for stand density are examples of operational cruises. Results from these surveys form the basis for decisions on subsequent activities about the specific geographic areas cruised (17).

Operational lost time--See machine time, scheduled operating time, delay time, nonmechanical delay time.

Operations research--Scientific approach to decision making that involves the operations of organizational systems (22).

Operator--Owner or contractor of a logging operation.

--Person who operates a piece of equipment (12).

Optimum road spacing-Distance between parallel roads that gives the lowest combined cost of skidding and road construction costs per unit of log volume (22).

Other productive time--See machine time, scheduled operating time, productive time.

Other public--See ownership classes.

Out-of-shift repair time--See machine time, scheduled nonoperating time.

Out-of-shift service time--See machine time, scheduled nonoperating time.

Outriggers-Stabilizers that are generally found on knuckleboom loaders or mobile chippers (23).

Ovendry ton--See bone-dry ton.

Overmature--Point at which timber has begun to lessen in commercial value because of size, age, decay, or other factors. Many trees in a virgin or old growth stand are overmature and are, in fact, dying of old age (12).

Overrun--Difference between the log scale of a shipment of timber and the volume of actual lumber obtained from it (24).

Overstocked stands--See stocking classes.

Overstory--Layer of foliage in a forest canopy including the trees in a timber stand. Tall mature trees that rise above the shorter immature understory trees (9).

Overstory removal--Any silvicultural treatment with the desired end result being the removal of the overstory component from the growing stock of a multi-storied stand. Examples are outright harvest, girdling, and simply felling the overstory (17).

Overstory trees--Trees that form the uppermost canopy layer in a forest of more than one story (20).

Overtopped--See suppressed.

Ownership classes--

County--Land owned by counties or land leased by them for more than 50 years.

Farmer owned--Land owned by operators of farms. Farm must include 10 or more acres from which the sale of agricultural products totals \$50 or more annually, or, if less than 10 acres, the yield must be at least \$250 annually.

Forest industry--Land owned by companies or individual operating wood-using plants.

Indian--Tribal land held by the Federal Government but administered for Indian tribal groups and Indian trust allotments.

Miscellaneous federal--Federal land other than National forest, Bureau of Land Management, and Indian land.

Miscellaneous private--Privately owned land other than forest industry or farmer owned.

Municipal--Land owned by municipalities or land leased by them for more than 50 years.

National Forest--Federal lands that have been designated by Executive Order or Statute as National Forests, or purchased units and other land under the administration of the USDA Forest Service.

Other public--Public land other than National Forests.

State--Land owned by States, local public agencies, or land leased by them for more than 50 years.

log ends or pallets are placed to make skidding easier and prevent digging in and rutting (6).

Parent tree--Any tree whose seeds are used to produce progeny for use in genetic experimentation. Usually the parent tree is selected because it displays characteristics either interesting from a research standpoint or desirable in an operational forest management program (17).

Partial cut--Logging area in which only part of the trees are felled and bucked, as opposed to **clearcut** (9).

Pass block--Light-weight block hung at the top of the spar tree and used to lift the bull block and other gear in rigging the tree (32).

Pay-as-cut--Timber purchase based on a dollar amount for a certain amount/volume of wood, such as dollars per MBE. Payment is made only as timber is cut and transported (17).

Payload--Gross weight of a loaded vehicle minus the weight of the vehicle itself (24).

Payout--To unreel cable (19).

Peat--Generally, unconsolidated material that consists mainly of undecomposed, or only slightly decomposed, organic matter accumulated under conditions of excessive moisture. More specifically, a layer of organic material containing plant residues that may show little, if any, morphological change and that have accumulated as a result of submergence in water or through being in a very wet environment (19).

Peatland--See muskeg.

Peavey--Stout wooden lever, fitted with a strong, sharp spike used for rolling logs. (22). See cant dog and cant hook.

Peeler--High-grade log from which veneer is peeled, on a lathe, for the production of plywood. Peelers are most frequently from old-growth trees. The resulting veneer is usually clear and used in sanded plywood (12).

Periodic annual **increment**--Mean annual growth or increase in volume during a specific period of time (26).

Personnel time--See machine time, scheduled operating time, delay time, nonmechanical delay time.

Piece rate--Payment for labor where income is related to output (22).

Piedmont--Located or formed at the base of a mountain range; an example would be a **piedmont** terrace.

--Area, plain, slope, glacier, or other feature at the base of a mountain, such as a foothill or bajada. In the United States, the plateau extending from New Jersey to Alabama and lying east of the Appalachian Mountains is considered a **piedmont** (34).

Piling--See harvest functions.

Pintle hook--Hooking device normally found on the rear of a piece of equipment and used to pull or attach a cable or trailer (23).

Pit--Generally a colloquialism for a landing, also known as a deck or ramp (23).

Plan and profile--Drawing showing both horizontal (plan) and vertical (profile) delineation of a road survey (22).

Planimeter--Instrument used to mechanically measure

P

Pacific Coast States--Alaska, Washington, Oregon, California, and Hawaii (10).

P.A.I.--Periodic annual increment.

Pan--Large, flat, upward-curving metal plate on which

an area by tracing the perimeter on a plane surface (20).

—**Typically** used to estimate the size of an area from scale maps.

Plantation-Forest stand regenerated artificially either by sowing or planting.

-Manmade forest (17).

Plant byproducts-See timber removals.

Planting-Artificial regeneration method in which a new stand of trees is established by restocking the area with tree seedlings.

-Inserting tree seedlings in the ground by hand or machine (17).

Plant residues-See timber removals.

Plunge cut-Starting a cut in the center of a log using the tip of the chain saw blade. Also known as boring (24).

P.M.H.—**Productive machine hour.**

Pogo stick-Stand used to hold the air hose and electrical connections mounted behind the cab on a truck tractor. Also known as a hitchhiker (23).

Pole-Young tree at least 4 inches and less than 8 to 12 inches in d.b.h. (26).

-Any. considerable length of round timber below saw log **size**, ready for use after removal of the bark without further conversion. Suitable for power poles or for simple building work.

-Cedar or red fir log of saw log size, according to an individual pole manufacturer's specifications for length (17).

Pole size—**Trees** from 5 to 11 inches in d.b.h.

Poletimber-Arbitrary term for small sawtimber trees.

-Generally, trees 12 to 18 inches in d.b.h. Also known as small sawtimber.

Poletimber stands—See stand size classes.

Poletimber trees—See tree classes.

Pond value-Market price of logs delivered to a wet site, log pond, or tidewater (22).

Poorly stocked stands-See stocking classes.

Portable--Something that can be picked up and carried from one location to another (24).

Portable chipper terms—

Anvil-Fixed steel block that provides support and resistance for the chipper knife.

Chipper deck-Infeed deck of a chipper, including the chain that feeds the material to be chipped (23).

Chipper discharge—Denotes the direction chips leave-the chipper housing. May be horizontal, overhead, or from the bottom (23).

Chipper infeed—Series of rollers at the front portion of the chipper where the material to be chipped enters (23).

Chipper knife-Replaceable piece of steel with sharpened edge; attaches to a rotating drum (23).

Chip separator—Portion of a chipper that includes a chipper spout for the separation of needles and twigs from chips (23)

Chute-Outfeed portion of a chipper. Also known as a discharge spout (23).

Counter knives—Piece of steel that breaks a chip into desired lengths. Found behind, and similar in appearance to, the chipper knife (23).

Discharge spout-See chute, in this section.

Fen-Part of a chipper that creates an air stream, moving the chips out of the chipper housing (23).

Feedplate-Vertical plate of steel that prevents the tree in the chipper from passing beyond the disk (23).

Feed rate-Distance the stock being chipped moves during a given interval of time or operational cycle (23).

Infeed throat-The somewhat funnel-shaped portion of the **infeed** that causes the tree to move forward to the feed and downward to the anvil (23).

Potential yield-Estimated maximum sustained yield cutting level (stated for a period of time such as a year or decade) attainable with intensive forestry; considers productivity of the land, conventional logging technology, standard cultural treatments, and interrelationships with other resource uses and the environment. Excluded in the estimates are the effects of fertilization, genetic improvement, and irrigation, which have not yet been proven to be economically feasible over large portions of the country (17).

Power shift—**Transmissions** that can be shifted while transmitting full engine power to the tracks or wheels (22).

Power shovel-Crane, equipped with a boom and dipper stick on the end, to which a shovel bucket is mounted for moving soil (22).

Precommercial thinning-Cutting trees from a young stand so that the remaining trees will have more room to grow to marketable size. **Trees** cut in a **precommercial** thinning have no commercial value and normally none of the felled trees are removed for utilization. The primary intent is to improve growth potential for the trees left after thinning (12, 17).

Prehauling-Moving pulpwood from stump site to truck loading site by carrying it off the ground. Also known as forwarding (22).

-See harvest functions: forwarding.

Preload—To circle several logs with binders so the entire unit can be hauled as one log (19).

Prelog—To remove small understory trees, windfalls, or special products such as poles or pilings from a stand ahead of the main logging to prevent breakage (20).

Prelogging-Cutting specified high-value wood products such as poles and pilings before cutting the remainder of the trees (24).

Prescribed burning-Deliberate use of fire under conditions where the area to be burned is predetermined and the intensity of the fire is controlled (243).

Preventive maintenance-Maintenance measures taken in advance to avoid breakdowns (3).

Primary logging road-Road designed and maintained for a high level of use. **Typically** an all-weather gravel road that is part of a permanent road system (17).

Primary transportation-Movement of a felled tree from the stump to a landing (10).

Prime log-Log that is a given size and free from defects (24).

Priority sequence-Order in which settings are to be yarded (25).

Processor-kc harvesting machine classifications; multifunction machines.

Producer-Independent operator who produces and delivers pulpwood to a dealer or a pulpwood company (22).

Productive machine hour-Time during scheduled operating hours when a machine performs its designated function (time exclusive of such things as machine transport, operational or mechanical delays, and servicing or repair) (35).

Productive time-**See** machine time, scheduled operating time.

Pruning-Removal of live or dead branches from standing trees-usually the lower branches of young trees and of multiple leaders or shoots in plantation trees—for the improvement of the tree or its timber. Cutting away of superfluous growth, including roots, from any plant to improve its development (28).

Pulp-Mechanically ground or chemically digested wood used in manufacturing paper and allied products (17).

Pulp hook-curved steel hook with a wooden cross handle; used in handling pulpwood (24).

Pulp log-Log that does not meet the one-third merchantability standard for a saw log but contains a **minimum** of SO-percent sound wood fiber by volume (17).

Pulp mill-Mill that converts pulpwood to wood pulp (22).

Pulpwood-Roundwood used as a source of wood fiber in a pulp mill (22).

-Wood cut or prepared primarily for wood pulp and subsequent manufacture into paper, fiberboard, or other products, depending largely on the species cut and the pulping process (6).

Pulpwood dealer-Middleman who buys pulpwood from the producer and sells it to the pulp mill company or acts as a commission broker for the company in producing pulpwood (22).

Net annual growth of growing stock-Annual change in volume of sound wood in live sawtimber and poletimber trees, plus total volume of sound wood in live sawtimber and poletimber trees, plus total volume of trees entering these classes through growth, minus volume losses resulting from natural causes.

Net annual growth of sawtimber-Annual change in volume of live sawtimber trees plus total volume of trees reaching sawtimber size, minus volume losses resulting from natural causes.

R

Ramp—**See** landing.

Reach-Wood or metal structural member connecting a logging trailer to a truck tractor.

-Distance spanned by a skyline (20).

Reaction wood-Wood with distinctive anatomical and physical characteristics, formed typically in parts of leaning or crooked stems and in branches, that tends to restore the original position of the branch or stem if this has been disturbed. Also known as tension wood (in broadleaved trees) and compression wood (in conifers) (17).

Reforestation-Restocking an area with forest trees (28).

Regeneration-Renewal of a tree crop, either by natural or artificial means.

-Young tree crop (17).

Regression-Statistical technique used to evaluate relationships among variables (22).

Reload-To transfer logs from one mode of transportation to another or between vehicles (20).

Relog-To salvage small timber, culls, and other residuals following the main logging operation (20).

Repair time—**See** machine time, scheduled operating time, operating time, delay time, mechanical delay time.

Reserve forest land—**See** land-use classes, forest land.

Residuals—Trees remaining after an intermediate or partial cutting of tree crops or stands. In general, residuals are byproducts of some operation. Also known as waste. Examples are chips from lumber production and hog fuel from any wood processing operation (17).

Residual stand—Trees remaining in an area after the cutting operation has been completed (9).

Residual value-Actual or assumed value of a machine after it has been fully depreciated (20).

Quad-One quadrillion (1×10^{15}) Btu (35).

Quality Classes (33)—

Mortality of growing stock-Volume of sound wood in live sawtimber and poletimber trees dying annually from natural causes. Natural causes include fire, insect, disease, and animal damage; weather; and suppression.

Mortality of sawtimber—Net board-foot volume of sawtimber trees dying annually from natural causes.

Residue-Wood or bark that is left after a manufacturing process (23).

Rick-Pile of evenly stacked cordwood, stave, bolts, or other short-length wood (24).

Rig—To install the blocks and lines used in a cable logging system (6).

Rigging-Cables, blocks, and other equipment used in yarding logs (22).

Right-of-way-Strip of land on which a road is to be constructed (22).

Ring debarker—See harvesting machine classifications, single function machines: debarker.

Ring rot—Circular rot in a log. Any rot localized mainly in the springwood of the growth rings, giving a concentric pattern of decayed wood in the cross section of a tree or log (17).

Riparian right—Right of someone owning land located on the bank of a natural watercourse, such as a river, lake, or tidewater, to access or use the shore, bed, or water (17).

Riprap—**Rough** stones of various sizes placed compactly or irregularly on the ground surface to prevent scouring by water or debris (22).

Road-Skid road in skidder or high-lead logging. Cleared path along which logs are hauled to the landing with one setting of the rigging (19).
-Access and haul route for vehicles (20).

Road pattern—characteristic arrangement of spur roads in relation to each other (22).

Rocky Mountain States—Idaho, Montana, South Dakota, Wyoming, Arizona, Colorado, Nevada, New Mexico, and Utah (10).

Rod—Surveying instrument made of wood and graduated in feet and tenths of a foot. Used with various leveling instruments to determine differences in elevation between two points (22).

Rod assemblies—Where the gland, wipers, O-rings, and packing are found in a hydraulic cylinder rod (23).

Rolling resistance—Retarding force of the ground against the wheels of a vehicle (22).

Root rot—Disease that destroys tree roots, often killing the tree (17).

Rops—Roll-over protective structures that protect the operator if a machine overturns (20).

Rosser—Machine that peels bark using knives (24).

Rotation—Period of years between establishment of a stand of timber and the time when it is considered ready for final harvest and regeneration (33).
-Planned number of years between the regeneration of a timber stand and its final cutting (20).

Rotten trees—See tree classes.

Rough cut—Lumber that has not been dressed (surfaced) but which has been sawn, edged, and trimmed to at least show saw marks in the wood on the four longitudinal surfaces of each piece for its overall length (17).

Rough trees—See tree classes.

Roundwood—A length of cut tree generally having a round cross-section, such as a log or bolt (12).

Roundwood products—Logs, bolts, or other round sections cut from trees for industrial or consumer use (33).

Rub tree—Tree used as a fender or pivot to protect the remaining stand during yarding (20).

Running line—Moving cable (32).

Running skyline—System of two or more suspended moving lines, generally referred to as main lines and haul-back lines. Will provide lift and travel to the load carrier when tension is properly applied (22).

S

Safety guy—Line rigged under the bull block to take it to the ground if the holding straps break (32).

Safety Swede—Lever used to tighten binders on loaded logging trucks (12).

Sag—Slack in a cable, particularly in a skyline (19).

Salvage logging—Cleanup operation, generally with a small crew and light equipment, that collects merchantable material too small to be handled economically with big equipment (19).
-Salvaging timber damaged by wind, insect, fire, ice, or other natural causes (10).

Sand bolster—Part of a landing gear that rests on the ground, across and between the two upright portions (23).

Sapling—Young tree less than 4 inches in d.b.h. The minimum diameter of saplings is usually, although not always, placed at 2 inches (17).

Saplings—See tree classes.

Sapling seedling stands—See stand size classes.

Sawlog—Portion—That part of the bole of sawtimber trees between the stump and the saw log top (33).

Saw logs (sawlogs)—Logs meeting minimum regional standards of diameter, length, and defect. Logs must be at least 8 feet long, have a minimum diameter inside bark of 6 inches for softwoods and 8 inches for hardwoods, and maximum defect as specified by regional standards (33).

Sawtimber—Trees suitable for production of saw logs (24).
-See stand size classes.

Sawtimber stands—See stand size classes.

Sawtimber trees—See tree classes.

Scale—To measure the weight or volume of a log or load of logs (24).

Scaling—Determination of the gross and net volume of logs using the customary commercial volumetric units for the product involved (22).

Scalping—Removing small plants and duff or ashes from around the spot where a tree seedling will be planted. Usually done by hand rather than by machine (17).

Scarification-Shallow loosening of the soil surface (22).

Scheduled machine hour-Time in which a machine is intended to be operated and has an operator scheduled.

Scheduled nonoperating time--See machine time.

Scheduled operating time--See machine time.

Schoolmarm--Tree that initially had a single trunk that later split into two separate trunks part way up the tree (12).

Scout--Two-runner sled, without tongue or shafts, used to haul logs or bolts from the woods (22).

Scribner rule-Diagram log rule, one of the oldest in existence, that assumes 1-inch boards and a 1/4-inch kerf, makes a liberal allowance for slabs, and disregards taper.

--Official rule of the Canadian Forestry Branch, Department of Resources and Development. Also used in many parts of the United States (26).

Sealed bid sale--Sale in which interested parties submit written bids at the time and place specified (17).

Seasoned-Wood that has been dried to a certain moisture content to improve its serviceability. According to the grading standards of the Western Wood Products Assoc., seasoned softwood lumber is defined as having a moisture content of 19 percent (**ovendry** basis) or less (17).

Secondary logging road-Road designed for relatively little use. **Typically** a dirt road, with no gravel, used only during dry weather (17).

Secondary transport-Movement of wood from the landing or transfer point. Includes movement by truck, rail, or water (10).

Second growth--Trees that come up naturally after the first growth of timber has been cut or destroyed by fire. Also known as young timber (9).

Section-Land survey subdivision. Usually one square mile (640 acres) (17).

Seedbed-Area prepared to receive seeds, such as an area cleared of plants and duff, so that natural seed fall can establish a new forest (17).

Seed block-Generally used to describe uncut blocks of trees that are left between and around small **clearcut** blocks to provide seeds for natural regeneration (17).

Seedling-Young tree grown from seed, from the time of germination until it reaches sapling **size**.

-In nursery practices, a young **tree** that has not been transplanted (17).

Seedlings-See tree classes.

Seedling and sapling stands-Where 10 percent of the stand consists of growing-stock trees, and saplings and/or seedlings constitute more than half this stocking (33).

Seed tree--Tree that produces seeds; usually a superior tree left standing at the time of cutting to produce seeds for reforestation (28).

Select grade-High-quality lumber. This grade is recommended for all finishing uses where fine appearance is essential. Widely used for high-quality interior trim and

cabinet work with natural, stain, or enamel finishes (17).

Selection cutting--Cutting only a portion of the trees in a stand, usually those marked or designated by a forester (24).

Selection system-Uneven-aged silvicultural system in which single or small groups of trees are periodically selected to be removed from a large area so that age and **size** classes of the reproduction are mixed (20).

Selection thinning--Removal of dominants that have exceeded the diameter limit prescribed, in favor of smaller trees with good growth form and condition. This will promote conversion to a selection forest (26).

Selective cut--Type of timber harvesting that removes only certain species above a certain size or value (20).

Self loader-Logging truck with a loading device, **generally** a knuckleboom loader, mounted behind the cab (20).

Separator wood-Material that has been separated from the whole tree during the chipping process and is unacceptable for pulp and paper manufacture. Usually used as energy wood (3).

Service time--See machine time, scheduled operating time, operating time, delay time, mechanical delay time.

Setting-Area logged to one yarder set-up (22).

--**Temporary** location of a cable yarding system, portable mill, or other machine used for logging (24).

-Area yarded to one landing (20).

Shackle-Clevis or U-shaped metal fitting with a pin through the ends (32).

Shay Swivel-Fitting used to attach the slack-pulling line to the main line on a skyline system (32).

Shear-Hydraulically operated scissorlike device for crosscutting the stem of a tree. One type of tree shear uses a cutting blade, which closes parallel to the anvil (22).

Shearing strength-Capacity of an object or soil to resist shearing stresses (20).

Sheave-Grooved wheel or pulley (22).

Sheepsfoot roller-Steel drum with short metal rods on the outside; sometimes shaped like a sheep's foot. Used for compacting soil (22).

Shelterwood logging-Method of harvesting timber so that selected trees remain scattered throughout the tract to provide seeds for regeneration and shelter for seedlings (12).

Shelterwood system--Even-aged silvicultural system in which a new stand is established under the protection of a partial canopy of trees. The mature stand is generally removed in a series of two or more cuts, the last of which is when the new even-aged stand is well developed (20).

Shipping dry-Having a moisture content (**ovendry** basis) of 14 to 20 percent. Results in reduced shipping weight and less susceptibility to decay. Used in the international lumber trade (17).

Short-log trees-See tree classes.

Short rotation energy plantations-Plantings established and managed under short-rotation intensive culture practices (32).

Short ton-U.S. weight measure equal to 2,000 pounds (17).

Shortwood-Pulpwood less than 120 inches in length (22).

—**Trees** or **stemwood** portions of trees delivered in product lengths of less than 15 feet and normally considered only for pulpwood (23).

Shotgun-Two-drum, live skyline yarding system used in uphill logging, in which the carriage moves down the skyline by gravity, is lowered to attach logs, and is then raised and pulled to the landing by the main line (10).

Show-Any unit of operation in the woods associated with timber harvesting (22).

Shrinkage-Decrease in wood dimensions due to loss of water in the wood cell walls. Shrinkage across the grain of wood occurs when the moisture content falls below 30 percent, the fiber saturation point. Below the fiber saturation point, shrinkage is generally proportional to moisture content, down to a moisture content of zero percent. Shrinkage is expressed as a percentage of the green wood dimensions (17).

Shuttle hauling-Use of preloading trailers to reduce truck turn-around time (22).

Side-Men and equipment needed to yard and load any one logging unit of an operation (22).

Silvicultural system-Process of tending, harvesting, and replacing forest trees, which results in the production of forests with distinct compositions. Systems are classified according to the method of harvest cutting used for stand reproduction (20).

Silviculture—**Generally**, the science and art of cultivating (such as with growing and tending) forest crops, based on the knowledge of silvics. More explicitly, the theory and practice of controlling the establishment, composition, constitution, and growth of forests (20).

Single-action shear-Mechanized cutting tool that uses one hydraulic cylinder to push the cutting blade through the tree while a fixed anvil provides support for the blade on the tree's opposite side (9).

Single function machines-See harvesting machine classifications.

Single-span skyline—**Skyline** without intermediate support spars (32).

Single-stem-Operation handling one tree at a time (23).

Site class-Classification based on ecological factors and the potential production capacity of an area; a measure of the relative production capacity of a site (17).

—See land classification.

Site index-Measure of forest productivity generally expressed as the height in feet of dominant and codominant tree species at a specific index age such as 25, 50, or 100 years. Site indexes are normally grouped by site classes (17).

—See land classification.

Site preparation-Removal or deadening of unwanted vegetation prior to planting trees; includes prescribed burning, use of herbicides, disking, and other mechanical means of removing vegetative cover (33).

Site utilization—**Term** used when indicating the proportion of a usable forest site occupied by healthy, vigorous forest crop trees at any one point in time (17).

Six-by-six-Motor truck with six powered wheels, two in front and four in back (24).

Skid-Load being pulled by the skidder (22).

Skidder-See harvesting machine classifications, single function machines.

Skidding-See harvest functions.

Skidding chain-Length of chain fastened around the end of a log (22).

Skidding pan-Plate of heavy steel, round in front, placed under the front end of logs being skidded to prevent them from digging into the ground (24).

Skidding tong—**Tong** used in skidding to grasp a log (22).

Skid pole-Logs or poles, commonly used in pairs, on which logs are rolled (22).

Skid road-Road cut through the woods for skidding (24).

Skid trail-Skidder path through the woods (23).

Skyline-Cableway stretched tautly between two spar trees and used as a track for a skyline carriage (22).

Skyline carriage-Wheeled device that rides back and forth on the skyline for yarding or loading (22).

Skyline crane-Yarding system capable of moving logs laterally to a skyline as well as transporting logs either up or down a skyline to a landing (22).

Skyline crane carriage-Skyline carriage that incorporates provisions for pulling slack in the skidding line (32).

Skyline road-Area bounded by the length and lateral yarding width of any given skyline setting (32).

Skyline slope-The slant or inclination of the skyline chord, generally expressed as a percent (32).

Slackline system-Live skyline system employing a carriage, main line, and haul-back line. Both main and haul-back lines attach directly to the carriage. The skyline is lowered by a slackening of the line to permit the chokers to be attached to the carriage. Lateral movement is provided by side blocking (22).

—Pour-drum standing skyline yarding system in which either the slack pulling line pulls the main line through the carriage or a carriage containing a skidding line is used. The haul-back line returns the carriage and holds it in place during lateral yarding (20).

Slack-pulling line—**Line** used to pull the main line through a logging carriage (32).

Slash-Woody material or debris left on the ground after an area is logged. Also known as brush (22).

Slasher-Machine that bucks **longwood** into shortwood at the landing. Also known as buckner (22).

-See harvesting machine classifications, single function machines.

Slasher buncher—See harvesting machine classifications, multifunction machines.

Slashing—See harvest functions.

Slide-boom loader—See harvesting machine classifications, single function machines: loader.

Sling-Loop of wire rope used in loading logs too large to be handled by tongs (19).

Slip—Relative movement in the direction of travel at the mutual contact surface of the traction or transport device and the surface that supports it (7).

Slip grab—Pear-shaped link, attached by a swivel to a chain. The chain runs freely through this chain when the large end is down but catches and holds when the small end is down (24).

Slip hook—Rounded hook that permits a chain to run freely through it (22).

Sloop—Two-runner sled to haul logs or bolts out of the woods. Similar to a scoot except that the sloop is equipped with a tongue (22).

Small sawtimber—See poletimber.

Small trees—Live trees 1.0 to 5.0 inches in d.b.h. (30).

Smallwood—General term describing small-diameter material (such as what might be removed by a precommercial thinning) that is typically unsuitable for commercial roundwood products (35).

S.M.H.—Scheduled machine hour.

Snag—Standing dead tree from which the leaves and most of the branches have fallen (22).

-See buckskin.

Snubbing line—Line used for lowering a load (22).

Soil adhesion—See soil reaction nomenclature.

Soil compaction—See soil reaction nomenclature.

Soil failure—See soil reaction nomenclature.

Soil reaction nomenclature

Soil **adhesion**—Sticking of soil to foreign materials such as soil implements, tracks, or wheels (7).

Soil **compaction**—Increased soil density resulting from the packing effect of machines moving over the soil. Compaction disturbs the soil structure and can cause decreased tree growth, increased water runoff, and soil erosion (17).

Soil failure—Alteration or destruction of the soil structure by mechanical forces such as in shearing, compression, or tearing (7).

Soft rot—Rot occurring in the outer wood layers under very wet conditions (26).

Softwoods—Botanical grouping of trees that are usually evergreen and have needlelike or scalelike leaves. Also known as conifers and coniferous trees (33).

-Also the wood produced from such trees. The term softwood does not refer to the hardness of the wood (16).

Sorting—Separation of forest products. Usually occurs at the landing (23).

Sound wood—Wood that is free from defect (26).

South—See Southern States.

Southeast—See Southeastern States.

Southeastern States—Virginia, North Carolina, South Carolina, Georgia, and Florida. Also known as the Southeast (13).

Southern pine species—

-Loblolly (*Pinus taeda* L.), longleaf (*P. palustris* Mill.), pitch (*P. rigida* Mill.), pond (*P. serotinu* Michx.), sand (*P. clausa* [Chapm. ex Engelm.] Vasey ex Sarg.), shortleaf (*P. echinata* Mill.), slash (*P. elliottii* Engelm. var. *elliottii*), South Florida slash (*P. elliottii* var. *densa* Little & Dorman), spruce (*P. glabra* Wit.), Table Mountain (*P. pungens* Lamb.), and Virginia (*P. virginiana* Mill.) (18).

Southern States—Alabama, Mississippi, Texas, Louisiana, Arkansas, and Tennessee. Also known as the South (23).

Spacing control—Act of creating, within the limits of the existing stand, a uniform distribution of trees that provides optimum growing space for each tree by eliminating overcrowding. As a result, tree diameter growth is increased and the time required for the forest to reach harvestable size is decreased (17).

Span—Horizontal distance between skyline supports (22).

Spar tree—Tree or mast on which rigging is hung for one of the many cable hauling systems (22).

Species—Group of similar individuals having a number of correlated characteristics and sharing a common gene pool. The species is the basic unit of taxonomy on which the binomial system has been established. The scientific name of a plant or animal gives the genus first and then the species as in *Abies* (genus) *grandis* (species). Species is both the singular and plural form of the word (22).

Specific gravity—Ratio of the weight of a volume of material to the weight of an equal volume of water at a given temperature (7).

Splicer—One who joins two pieces of cable together by intertwining the wire strands (6).

Spot—To place a truck or trailer in position for loading (24).

Spud—Tool with a narrow-shaped, curved blade used in removing bark by hand. Also called a barking iron (24).

Spur road—Road that supports a low level of traffic, such as a level that would serve one or two settings. Little or no engineering design work is needed to build it (22).

Stacker—Mobile machine for unloading and stacking or decking logs using the forklift principle and curved top clamps (22).

-A heavy-lift machine similar to a front-end loader, with forks and clamps capable of handling and loading logs (20).

Staggered setting—Clear-cut settings separated by uncut timber (22).

Stand-In silviculture and management, a tree community that possesses sufficient uniformity in composition, constitution, age, spatial arrangement, or

condition to be distinguishable from adjacent communities. This tree community forms a silvicultural or management entity; for example, a subcompartment. Both natural and artificial crops are included, and there is no connotation of a particular age.

-In mensuration, the amount of timber and/or **fuelwood** standing on an area, generally expressed as volume per unit area; for example, board feet per acre or cubic meters per hectare (26).

-In the United States, growth of trees on a minimum of 1 acre of forest land that is at least 16.7 percent stocked by forest trees of any size.

Stand age-See land classification.

Stand condition-General health of a stand of trees reflected by its development relative to the site potential. A good stand condition refers to a fully stocked stand that is producing fiber at a high rate based on specific site conditions such as moisture, soil quality, and other biological variables (17).

Stand density-Number of merchantable trees per acre (9).

-**Quantitative** measure of tree stocking frequently expressed in terms of number of trees, basal area, or volume per unit area (20).

Stand improvement-Measures such as thinning, release cutting, girdling, weeding, or poisoning of unwanted trees to improve growing conditions (33).

Standing line-**Fixed** cable that does not move during logging operations; for example, a skyline anchored at both ends (22).

Stand size classes (33)-

Nonstocked areas-Commercial forest land on which the stocking of growing-stock trees is less than 16.7 percent.

Poletimber stands-Stands at least 16.7 percent stocked with growing-stock trees, with half or more of this stocking in sawtimber and/or poletimber trees. Stocking of trees exceeds that of sawtimber stands.

Sapling-seedling stands-Stands at least 16.7 percent stocked with growing-stock trees, with saplings and/or seedlings comprising more than half of this stocking.

Sawtimber stands--Stands at least 16.7 percent stocked with growing-stock trees, with half or more of this stocking in sawtimber or poletimber trees. **Sawtimber** stocking at least equals poletimber stocking.

Stand table-**Table** showing the number of trees by species and diameter classes, generally per unit area of a stand. Such data may be presented in the form of a frequency distribution of diameter classes (17).

State-See ownership classes.

Stem-Main body of a tree from which branches grow.

-Used loosely to refer to trees. For example: stems per unit area (20).

Stemwood-Wood from the main part of a tree-not from the branches, stump, or root (26).

Stick-Piece of short pulpwood (22).

Stiff leg-Loader with a boom that does not swing (24).

Strap-Short cable with a loop at each end (24).

Streamside management zone-See buffer strip.

Stock-Handle of a peavey or cant hook (24).

Stocking-Degree of utilization of land by trees.

Measured in terms of basal area and/or the number of trees in a stand compared to the basal area and/or number of trees required to fully utilize the growth potential of the land. A stocking percent of 100 indicates full utilization of the site and is equivalent to 80 square feet of basal area per acre in trees 5 inches in d.b.h. and larger. A stocking percent of 100 in a stand of trees less than 5 inches in d.b.h. would indicate that the present number of trees is sufficient to produce 80 square feet of basal area per acre when the trees reach 5 inches d.b.h. A stocking percent of over 100 is fully utilizing the site (33).

Stocking classes (33)-

Fully stocked stands-Stands in which the stocking of trees is from 100 to 133 percent.

Medium stocked stands-Stands in which the stocking of trees is from 60 to 100 percent.

Nonstocked areas-Commercial forest land on which the stocking of trees is less than 16.7 percent.

Overstocked stands-Stands in which the stocking of trees is 133 percent or more.

Poorly stocked stands-Stands in which the stocking of trees is from 16.7 to 60 percent.

Straw drum-Small drum on a yarder that handles the straw line (32).

Straw line-Light-weight line used to change main skidding lines and tackle in cable yarding systems (24).

Stumpage-Value of timber as it stands uncut in the woods.

-**Standing timber** itself (24).

Stump jumper-Heavy plate underneath a skidder that protects the back housing from contact with high stumps (23).

Stump pull-Slivers of wood remaining attached to the stump after a tree is felled, the slivers are considered as having been pulled from the butt of the log (22).

Stumpwood-Wood cut into short lengths and piled near the stumps (24).

-Stumps harvested after conventional logging or separated from **stemwood** after complete harvesting (3).

Stumpwood chips-Chips manufactured from stumpwood (3).

Sulky-Logging arch equipped with wheels instead of crawler tracks and towed behind a skidding machine (22).

-**Towed** logging arch mounted on wheels (24).

Support line--See cross support.

Suppressed-One of the four major crown classes, specifically trees with crowns entirely below the general level of the crown cover receiving no direct light either from above or from the sides. Also known as overtopped (17).

Sustained yield-Timber yield that a forest can produce continuously at a given intensity of management. Sustained yield management therefore implies continuous production planned to achieve a balance between growth (increment) and harvest at the earliest practical time (17).

Sustained yield management-See sustained yield.

Swamp-Area saturated with water throughout much of the year, but with the surface of the soil usually not deeply submerged. Usually characterized by tree or shrub vegetation (28).

—**To** clear the ground of underbrush and other obstructions (22).

Swamp buggy-Skidder equipped with high flotation tires.

Swath cutter-See harvesting machine classifications; single function machines.

Sweep-Gradual bend in a standing **tree** or in a log, pole, or piling (24).

Swell-butted-Pees greatly enlarged at the base (24).

Swivel-Universal joint used in rigging to prevent lines from twisting (19).

T

Tackle-Combination of blocks and ropes used in cable logging (24).

Tagline-**Extra** length of line at the end of a main line. Used as an extension for carrying additional choker hooks or to dampen the swing of a bucket or grapple on a boom-type loader (6).

Tail block-Block fixed to a stump at the outer edge of a setting (in ground-lead and high-lead cable logging) *or* to the tail spar (in skyline cable logging), through which the haul-back line is reeved for returning the main line and the butt rigging to the loading point (26).

Tailhold-In cable logging, the anchorage at the outer end of the skyline away from the landing. Also known as a tailholt.

—Line securing a machine to a stump (17).

Tailholt-See tailhold.

Tail spar-See tail tree.

Tail tree-**Tree** to which the far end of the skyline is attached. Also known as a tail spar (24).

Tandems-Second axle and set of wheels on the rear of a truck. Live indicates that they are powered, dead that they are not (24).

Tar heel-Name given to loggers from any Southeastern State (19).

Target forest-**Type** of forest, in terms of species mixture, size, stocking, and harvest age, considered best for a particular site in order to economically produce fiber in the qualities and quantities desired on a perpetual basis (17).

Technical life length-Time from when the machine goes into operation until it is no longer used in any opera-

tion. Normally, the unit for technical life length is productive time, expressed in hours (5).

Tension wood-See reaction wood.

Tether line-Line used to restrain a balloon in flight, such as the line from a logging balloon to the butt rigging (22).

Thinning-Cuttings made in immature stands in order to stimulate the growth of the trees that remain and to increase the total yield of useful material from the stand (25).

Thousand board feet-Unit of measurement equal to 1,000 feet of wood having a thickness of 1 inch (26).

Throat-See portable chipper terms, **infeed** throat.

Tightlining-Method of high-lead cable yarding in which the haul-back line supports the butt rigging and makes it possible to lift the butt rigging and its load over obstacles (24).

Tilt blade-**Blade** that can be tilted in respect to a vertical position (22).

—**Type** of dozer blade (23).

Tilt cab-Cab on a machine that is hinged on one side and can be tilted back and lowered for transport (23).

Timber-General term applied to forests and their products.

—Sawed lumber more than 4 by 4 inches in breadth and thickness (24).

Timber appraisal-Economic appraisal of the monetary value of a timber stand (22).

Timber products output-Timber products cut from roundwood and byproducts of wood-manufacturing plants. Roundwood products include logs, bolts, or other round sections cut from growing stock trees, cull trees, salvageable dead trees, trees on nonforest land, non-commercial species, sapling-size trees, and limbwood. Byproducts from primary manufacturing plants include slabs, edging, trimmings, **miscuts**, sawdust, shavings, veneer cores and clippings, and screenings of pulp mills that are used as pulp chips or other products.

Timber removals (33)-

Plant byproducts-Wood products, such as pulpwood chips, obtained incidental to the production of other manufactured products.

Plant residues-**Wood** material from manufacturing plants not utilized as a product.

Timber removals from growing stock-Volume of sound wood in live sawtimber, forest products (including roundwood products and logging residues), and other removals. Roundwood products are logs, bolts, or other round sections cut from trees. Logging residues are the unused portions of cut trees plus unused trees killed by logging. Other removals include growing stock trees removed by cultural operations such as timber stand improvement work and by land clearing and changes in land use.

Timber removals from sawtimber-**Net** board-foot volume of live sawtimber trees removed annually for forest products (including roundwood products and logging residues) and other removals, such as growing

stock trees removed by cultural operations (timber stand improvement work, land clearing, and changes in land use).

Timber stand improvement—Intermediate thinning of a forest stand, prior to its reaching mature rotation age, generally for the purpose of improving growing conditions or controlling stand composition (35).

Timber volume (33)—

Volume of growing stock—Volume of sound wood in the bole of sawtimber and poletimber from a stump to a 4-inch minimum top diameter outside bark or to the point where the central stem breaks into limbs.

Volume of sawtimber—Net volume of the saw log portion of live sawtimber in board feet.

T.L.L.—Technical life length.

Tongs—Pair of curved arms that pivot like scissors so that a pull on the ring connecting the shorter segments will cause the points on the longer segments to bite into the log. The tongs are activated by the pull on the loading line.

—Loading tongs without sharp points powered by air or hydraulic cylinders that close on a log (22).

Top—To cut off the unmerchantable top of a tree (24).

—**To** cut off the top of a tree down to a utilizable diameter (20).

Top lopping—lb cut limbs from downed tree tops so that no limbs are more than a specified length along the tree stem (24).

Topo—Topographic map. Shows the elevation contours of the ground (19).

Topping—See harvest functions.

Torque converter—Centrifugal pump, driven by an engine, that rotates in a case filled with oil (22).

Total time—See machine time.

Total tree—**Ike** with crown, main stem, and taproot. Does not include the lateral roots (29).

Tower—Steel mast used instead of a spar tree at the landing for cable yarding (22).

Tractor—Powered vehicle for off-the-road hauling. May be mounted on crawler tracks or wheels. A short wheel-base truck used to haul trailers (24).

Transferring—Lifting an entire load of logs from one mode of transportation and placing the logs on another carrier (22).

Transition forest—See interim forest.

Tree—Woody plant that usually grows to at least 20 feet in height at maturity, typically having a single trunk with no branches within 3 feet of the ground (II).

Tree classes (33)—

All live trees—Growing stock, rough, and rotten trees 1 inch in d.b.h. and larger.

Growing-stock trees—Live trees of any size except rough and rotten trees. See timber volume, volume of growing stock.

Poletimber trees—Live, vigorous, and well-formed trees of commercial species at least 5.0 inches in d.b.h. but smaller than sawtimber size.

Rotten trees—Live trees of any size that do not contain a merchantable 12-foot saw log, now or prospectively, because of rot (more than 50 percent of the cull volume of the tree is or will become rotten). Only commercial species are considered.

Rough trees—Live trees of any size that do not contain at least one merchantable 12-foot saw log, now or prospectively, because of roughness or poor form. Only commercial species are considered.

Saplings—Live, vigorous, and well-formed trees of commercial species, usually 1.0 to 5.0 inches in d.b.h.

Sawtimber trees—Live trees of commercial species containing at least one 12-foot saw log or two noncontiguous saw logs, each at least 8 feet long, and having a maximum allowable defect of 67 percent of the gross tree volume. Softwoods must be at least 9.0 inches in d.b.h. and hardwoods at least 11.0 inches in d.b.h.

Seedlings—Live trees of commercial species with diameters less than 1.0 inch that are expected to survive (not diseased and not heavily damaged by logging, browsing, or fire). Only softwood seedlings over 6 inches tall and hardwood seedlings over 1 foot tall are counted.

Short-log trees—Sawtimber-sized trees of commercial species that contain at least one merchantable 8-foot to 11-foot saw log (but not a 12-foot saw log).

Tree farm—Parcel of land on which trees are planted, cultured, managed, and harvested as a crop (12). Also, privately owned, managed forest area that has been certified as a tree farm by the American Forest Institute (17).

Tree farming—Application of silvicultural practices for the perpetual production of commercial timber crops. Includes all activities from stand establishment through delivery of commercial timber (logs) to a log yard at the initial commercial product processing facility (17).

Tree length—Entire tree, excluding the unmerchantable top and limbs (24).

Tree-length logging—Felling and transporting the trimmed bole in one piece, whenever possible, for cross-cutting at a landing or mill (26).

—**Unbucked**, limbed, and topped trees (19).

Tree shoe—Device in the shape of a segment of a circle used to support the skyline from a spar tree (22).

Trim allowance—Extra length allowed when bucking logs or estimating volume to account for loss from end injuries or uneven cuts (20).

Triple drum—Three-drum yarder (22).

Trolley—Traveling block used in a skyline (24).

T.S.I.—Timber stand improvement.

Turbocharger—Air pump designed to put more air into engine cylinders; pump is driven by the exhaust heat (22).

Turn—Logs yarded in any one trip (22).

—Load of logs brought in by a skidding unit during a single trip (landing to stump and return) made by a tractor or other skidding device (24).

-Logs brought to the landing in one yarding or skidding cycle (20).

Turnaround time—Time it takes for a truck or tractor to be loaded and unloaded (24).

Turnout—Area of sufficient size, adjacent to a single lane road, that serves as a temporary parking place for vehicles so that oncoming vehicles may pass (22).

Twitch—To skid logs or tree lengths on the ground without an antifriction device (24).

Two-storied stand—Forest stand in which two height classes of considerable difference occur: the overstory and understory. Does not apply to a forest in the process of reproduction, in which the appearance of two stories is due to a seed tree or shelterwood cut before the final cut (17).

U

Underbrush—Brush under a stand of timber (19).

Undercut—Wedge-shaped notch cut in the base of a tree to govern the direction of its fall. Also known as a box or a notch (9).

Understory—Foliage layer beneath the forest canopy.

-Young trees that are growing beneath the tall mature trees in a timber stand (9).

Uneven-aged management—Silvicultural system in which individual trees originate at different times and result in a forest with trees of all ages and sizes. Harvest cuts are on an individual-tree selection basis (33).

Unloaded deflection—Vertical distance between the chord and the unloaded skyline, measured at **midspan** (32).

Unmerchantable wood—Material that is unsuitable for conversion to industrial wood products due to size, form, or quality. **May** include rough, rotten, and dead trees; the tops, limbs, and cull sections from harvested trees; or small and noncommercial trees (35).

Upper stem portion—Sawtimber tree bole extending from above the merchantable top to a minimum **4-inch** top diameter outside bark or to the point where the central stems break into limbs (33).

V

Variable costs—Operation costs that result from running a machine, calculated on an hourly basis; includes cost of labor and items such as fuel, oil, wire rope, and replacement parts. Also known as operating costs (22).

Virgin timber—Timber from an original forest that has not been previously disturbed or influenced by human activity (26).

-See first growth.

Void-Volume in the wood structure that is not occupied by wood tissue (26).

Volume of growing stock—See timber volume.

Volume of sawtimber—See timber volume.

W

Waiting repair time—See machine time, scheduled operating time, delay time, mechanical delay time.

Waste—See residuals.

Water bar—See cross-ditch.

Water table—Upper limit of a saturated zone in the soil (11).

Wetland—Transitional area between dry land and aquatic areas having a high water table of shallow water.

-Land with one of the following three attributes:

(1) periodically supports hydrophytes, (2) substrate is predominately undrained hydric soil, (3) substrate is **nonsoil** and saturated or covered with water during part of the growing season each year (II).

Whole tree—**All** components of a tree, except the stump. Also known as a full tree.

Whole-tree chip fires—See **W.T.C.** fires.

Whole-tree chips—Chips made from a whole-tree.

Wildfire—Unplanned fire requiring suppression action.

Can be contrasted with a prescribed fire that burns within prepared lines, enclosing a designated area, under predetermined conditions (17).

Winch—Steel spool connected to a power source. Used for reeling or unreeling cable. Also known as drum (22).

Windfall—Tree or trees that have been uprooted or broken off by the wind. Also known as blow down (22).

Windrow—**Long** narrow pile, usually of logging slash removed from a planting site (17).

Wind shake—Crack in a tree caused by high winds (19).

Witness tree—**Tree** used by surveyors to mark the location of a survey corner; the tree is located near the survey corner and is inscribed with survey data. Also known as a bearing tree (12).

Wolf tree—**Large** rough tree, generally not good for lumber (19).

Wood conversion—Transformation of natural timber into any kind of commercial product. Includes all activities from commercial timber (log) delivery to the log yard at the initial commercial processing facility to the final product form offered for commercial sale as a consumer product (17).

Wood pulp—**Fiber** from wood with varying degrees of purification that is used for the production of paper, paper board, and chemical products (22).

W.T.C.—**Whole** tree chips.

W.T.C. fires—Fires occurring in **W.T.C.** piles, usually as a result of heating and spontaneous combustion (3).

Y

Yard-Place where logs are accumulated (22).

Yarder—System of power-operated winches used to haul logs from a stump to a landing. Also known as a donkey (22).

Yarder wood-Wood brought into a yard in the form of tree lengths, logs, or bolts, to be cut into shorter lengths (24).

Yarding—See harvest functions.

Yarding of unmerchantable material-yarding of cull, rotten, small, or otherwise unsalable wood material to a designated area for disposal is written into the timber contract. Required on all USDA Forest Service timber sale contracts (17).

Yarding road-Path followed by a turn of logs yarded by a cable method (22).

Yarding tower-Steel tower used on a steel spar skidder. -Light-weight tower built on a tractor (19).

Yield-Amount of product output recovered from a quantity of raw material input in forest product industries.

-Estimate in forest mensuration of the amount of wood that may be harvested from a particular type of forest stand by species, site, stocking, and management regime at various ages (17).

Yoke-Heavy U-shaped part of a block by which the pulley is attached (24).

Y.U.M.-Yarding of unmerchantable material.

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1989. Glossary of terms used in timber harvesting and forest engineering.
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Provides definitions for 1,026 words and terms used in timber harvesting and forest engineering, with an emphasis on terms related to timber harvesting operations. Terminology dealing with basic forestry, harvesting equipment, and economics is stressed.

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